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TREASURY DEPARTMENT
UNITED STATES PUBLIC HEALTH SERVICE
RUPERT BLUE, SURGEON GENERAL

PUBLIC HEALTH BULLETIN No. 99

STUDIES OF THE MEDICAL AND SURGICAL CARE OF INDUSTRIAL WORKERS

BY

C. D. SELBY
Consulting Hygienist, United States Public Health Service

PREPARED BY DIRECTION OF THE SURGEON GENERAL

WASHINGTON
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INTRODUCTION.

One hundred and seventy industrial establishments, variously located in the Eastern and Middle Western States, were visited during the first six months of 1918 for the purpose of studying their medical and surgical facilities for the care of workers. The facilities in 155 establishments lend themselves to definite analyses, the other 15 being the medical administrative organizations of large corporations. The report which follows is based upon analyses of these data and also upon observations and opinions obtained in these visits. In it are considered the personnel, equipment, activities, methods, and record forms necessary to the care and relief of sick and injured industrial workers and the prevention of sickness among them. Existing conditions relative to the organization, management, and operation of industrial medical departments are described, and standards or ideals which have been suggested by analyses and observations are proposed.

DEFINITION.

Industrial medicine may be defined as the theory and practice of medicine applied to the purpose of preventing and alleviating sickness and injury among industrial workers in order that they may enjoy the benefits of continuous productive employment. It embraces a wide range of medical activities, including sanitation and preventive medicine, diagnostics, internal medicine, emergency and orthopedic surgery, roentgenology, laboratory technic and interpretation, orthodontia, dental prophylaxis, the well-known specialties of the eye, ear, nose, and throat, and other branches of practice.

Although fundamentally the science of medicine, the position which industrial medicine occupies is similar to that of employment, safety, and compensation. All are specialties in the science of industrial management. Physicians who do not understand this relationship (and medical training does not necessarily contribute to this understanding) have reluctance in accepting the materialistic viewpoints of employers and, conversely, have difficulty in persuading employers to accept their professional points of view.

Physicians and employers both must realize that industrial medicine is, in a measure, a compromise between the ideals of medicine and the necessities of business. In approaching the compromise this fact should not be overlooked, that medical service in the industries to be of the greatest possible usefulness must benefit primarily the working people. The benefit to industry naturally follows.

THE PURPOSE OF INDUSTRY.

Industrial establishments exist solely for manufacturing purposes, and the basis of their prosperity is the materials or products they manufacture. Production, as the output is called, is of the highest order of importance. It is life itself to industry.

Anything which is capable of facilitating production is welcome to industry so long as its cost is not excessive. The test is its ability to increase the quantity or to reduce the cost of production without impairing the quality. Witness the manufacturer who pays an efficiency engineer $17,000 for three months' work in rearranging the machines in his factory in order that materials may be moved more rapidly from the raw state to the finished product, or the manufacturer who discards a whole battery of smooth-running, though antiquated, machinery in order that he may install improved machines capable of a greater output.

On the contrary, anything that retards or does not facilitate production is tolerated by industry only so long as it is unavoidable. Accidental injuries are such. By incapacitating the worker, partially or wholly, they retard production. Necessitating always surgical treatment, frequently the payment of compensation, and occasionally the substitution of unskilled labor, they are sources of expense.

Employers generally are accustomed to provide surgical attention for their injured workers, but they do not solicit the aid of physicians for this purpose any more than they seek the accidents that cause the injuries. Exigent, humane, and economic reasons force them to accept and endure the burden of surgical service as a penalty for accidents which industry does not seem to be able wholly to prevent.

RELATION OF MEDICAL SERVICE TO INDUSTRY.

For the influence which industrial medicine may have upon lost time, labor turnover, etc., it has a strong appeal to employers but little to the people who work for them. To be fully acceptable, it must supply needs in the industrial lives of both, and those needs must concern the matter of production, for which industry exists. In order to show that medical service is capable of supplying such needs and to indicate its logical connection with industry, the relations of the two principal parties having to do with production will be analyzed from that standpoint.

Employers and employees are associated in industry because each has something the other needs and both are willing to exchange; the employers their money for labor and the employees their labor for money. In agreeing to an exchange the employers naturally desire as much labor as they can obtain for their money (maximum production at minimum cost) and the employees wish as much money as they can obtain for their labor (minimum production at maximum cost). To complete the bargain a compromise is unavoidable, and although the terms may not be evident they are in substance that the employers agree to pay more and the employees agree to labor more (produce more). The latter action only is relevant to the analysis.

Being the party of the first part, the employers assume leadership and either try to compel or to assist the employees to live up to their concurrence. If their method is compulsion they are likely to accept their employees as they come, with little or no discrimination, oblige them through stringent supervision or inspire them by premiums, bonuses, and extra pay for overtime to work faster and longer, either or both, and retain them, if they stay, only so long as they are able to meet the requirements for production. This method conduces to exhaustion of the workers, carelessness among them, neglect of their health (sickness), and their safety (injury). It is prolific in spoilage and wastage of output, breakage of tools and equipment, and idleness of machinery. It provokes lost time and labor turnover. For the employers the final results are lessened production and increased cost; they do not want them. For the employees they are lessened ability to produce and reduced pay; nor do they want them.

If the policy of the employers is to assist their working people to greater production, they do so by selecting them with consideration of their fitness for the work they are expected to do, helping them to be regular, dependable, and efficient, and aiding them constantly to increase their value.

For the accomplishment of these ends employers provide: (1) Safe, healthy places to work in; (2) machinery, tools, methods, and processes which permit rapid work of good quality, with health and body hazards reduced to the minimum; (3) competent supervision; (4) the organizations and equipment necessary to ascertain the kind of work applicants for employment are temperamentally, physically, and by training fitted to perform; (5) special facilities for training inexperienced help when qualified workers are not available; (6) physical supervision; (7) protection against the communicable diseases; (8) medical, surgical, and dental services when responsible for the conditions necessitating such services; (9) medical and dental prophylaxis; (10) proper nourishment at cost, or otherwise, during the working day; (11) time and facilities for rest and recreation if the work is monotonous, concentrating, or exhausting and conditions indicate the need; (12) instructions in how to keep well and avoid injuries; (13) opportunities for education and advancement; (14) assistance in adjusting social and financial difficulties; and (15) the encouragement of thrift, domesticity, morality, and sobriety.

The results that employers may expect from these activities are more of contentment and feelings of good will among their employees, greater stability and efficiency in their working forces, maximum of production and relatively low labor costs—results that are beneficial to their employees and society as well as themselves.

Knowledge of the human body, the conditions which impair it and the means for its restoration when impaired, and more especially knowledge of the measures necessary to enable employees to reach and maintain their greatest capacities for good work, are quite evidently essential to the carrying on of this program, and because of their special knowledge in these particulars and their skill in applying it physicians are peculiarly fitted to assist employers in doing so. The ability of physicians to participate in this program establishes the logical relation of medicine to industry.

HOW MEDICINE MAY SERVE THE PURPOSE OF INDUSTRY.

Since the value of medical service to industry is measured principally by its effects on production, the most useful industrial medical departments are obviously those that are best able to prevent sicknesses among the producing forces and undue loss of time from injuries incurred by them. It is suggested that the means for the accomplishment of these ends be made to conform, at least for the purpose of consideration, with the measures which employers use to assist their workers to greater efforts in their output. These have already been mentioned, but they will be repeated in order that their allied medical activities may be discussed in association with them. They are as follows:

1. *Safe, healthy places to work in.*—Virtually all manufacturing concerns have safety men. Usually they are responsible for the removal of insanitary and unhealthy conditions, in addition to those which are unsafe. There appears to be no particularly good reason why safety men should act as sanitary inspectors, except, possibly, that they have seen the need and have assumed the function in the belief that it would not otherwise be done.

One hundred and eighteen of the establishments whose facilities have been analyzed have whole or part time physicians in their employ. Of these, 17 make regular inspections of the properties, 4 make inspections at irregular intervals, and 6 make inspections on request or complaint. Twenty-eight have a connection with the safety work. They meet with committees and accompany the safety inspectors or committees on their rounds. Of those who make inspections, 24 give their whole time to industry and 3 part of their time.

The abatement of unhealthy and insanitary conditions would certainly seem to be quite within the province of industrial physicians. If they are remiss in this duty, an explanation is found in the pressure which the ordinary routine work, principally dressings, puts upon their time. Some, of course, have no initiative, and for them no apology is offered.

The tours of inspection should be made regularly at stated times and as often as circumstances may require. If this duty happens to be delegated to a safety, engineering, or architectural department, the physicians should arrange to accompany the inspectors and endeavor tactfully to aid them.

Observations should be made to include the premises as well as the buildings and to concern sewage and waste disposal, washing and toilet facilities, ventilating, illuminating and heating or cooling systems, blowers, suction devices, sweeping and cuspidor services, etc. Drinking waters should be examined frequently, unless the sources are unquestionable. Installations for regulating the temperature of drinking waters should be checked up occasionally by temperature tests at the faucets.

2. *Machinery, tools, methods, and processes which permit rapid work of good quality, with health and body hazards reduced to the minimum.*—There are hazards connected with the use of machinery and tools, but they are more evidently hazards to the body than to health. Their reduction to the possible minimum is a matter chiefly for mechanical consideration, and safety engineers have been made responsible because of that reason. Physicians are drawn into the accident problem after the damages have been done, and their relations are apt to be, in the eyes of the management, on a parity with that of a wrecking crew, necessary but not desirable. They may alter this relationship somewhat, and thereby assist in the prevention of accidents, by making available the information they are able to obtain directly from the injured people. This and information obtained from other sources, as, for instance, from foremen and fellow workmen, enable the safety engineers to analyze accidents and injuries individually and in series for the determination of their causes. Seemingly, with this in mind, a number of medical departments studied make one or more carbon copies of their reports of injuries, and these are sent to safety, compensation, and such other departments as are interested.

Although the physical qualifications of employees can not properly be discussed at this point, it may be mentioned that there is a relation between physical defects and accidents. There was, for example, the man whose flat feet caused him to become injured. It happened in this way: His work required that he move among machines. The long way was safe; the short way was dangerous. Walking was painful. At times when his feet hurt more than usual he was wont to take the short, though forbidden, way. One day he received the inevitable injury. Had the management been aware of the fact that this man's feet were so defective as to make walking painful, he certainly would have been transferred to sedentary work, and there would have been no hazard. To ascertain the presence of such defects, in order that employment departments may know of the limitations of employees and applicants for employment, is a function of industrial medicine.

Mechanical operations possess also hazards to health, which are, of course, less apparent to safety men than to physicians. They are those operations that are monotonous, concentrating, or exhausting, capable of being done easily by some types of people, but full of menace to the health of others. In this connection, likewise, a full knowledge of the physical and temperamental limitations of employees is of much assistance to employing departments, and of great benefit to the operatives themselves. Researches into the physiological effects of fatiguing and enervating operations may permit physicians to cooperate in the selection of qualified workers for the monotonous, concentrating, and exhausting jobs, and incidentally will serve to elevate the practice of industrial medicine to a higher scientific level.

Certain industrial processes require the use of chemicals that are known to be inimical to health. Certain others cause fumes, gases, and dusts which may be harmful or may be only disagreeable or irritating. Under what circumstances and conditions people may engage in these processes with reasonable safety and effort is a valuable study for the practitioners of industrial medicine, in the pursuit of which they may find many excellent sources of information among the older process workers, upon whom experience has bestowed a wisdom that does not appear in books on occupational diseases. Before attempting to advise in these matters physicians should seek the confidence of the workers by becoming familiar with the processes they use, and they should remember always that these people are experts and are to be treated as such lest the contempt which a professional has for an officious amateur be aroused in their minds.

3. *Competent supervision.*—Industrial physicians meet with many opportunities to clear up differences between employers and their employees. By successfully availing themselves of these opportunities, they are able to foster the feeling of good will which is so essential to competent supervision. In seeking to do so they should betray no confidences and at all times should be fair.

Industrial managements endeavor also to acquire knowledge of the productive capacities and limitations of their operatives, without which they may overwork some and underwork others. The information obtained by physicians through physical examinations permits them to supplement the technical knowledge of the employers and jointly they are able to distribute equitably the work to be done.

4. *The organizations and equipment necessary to ascertain the kind of work applicants for employment are temperamentally, physically, and by training fitted to perform.*—It is reasonable that employers should strive in their selection from applicants for employment to choose only such as may appear adapted to perform the work for which help happens to be needed. With this object in view, applicants are examined in various ways to determine their qualifications, and physical fitness is an important qualification to be considered. As might be expected, this part of the examination is delegated to physicians. Such is the arrangement in 69 of the industrial medical departments studied; the other establishments, at the time of the study, did not require physical examinations.

The selection of qualified employees implies the rejection of disqualified applicants. To avoid hiring people in whom the presence of physical impairments are at all likely to prove harmful to themselves or their fellow workmen was given as a purpose of the physical examination in quite a number of establishments. Although there was a variance of opinion as to what should be deemed just causes for rejection, these conditions were usually mentioned: Heart and kidney lesions, hernia, varicocele, hydrocele, varicosed veins and ulcers, deformities which impair function, deafness, imperfect vision, and the communicable diseases. There can be no question about the communicable diseases, but unless the principal reason for the rejection of impaired applicants is frankly to obviate the possibility of being forced to compensate them for incapacities of disputed origins or severities, it would seem that physicians who are familiar with working conditions in their establishments could assist in the assignment of a large proportion of the physically defective and by subsequent supervision aid them to do their work well. On the conviction that this is good business, a few officials asserted that the presence of a communicable disease was their only cause for rejection. This is the policy of a storage-battery company of Philadelphia, which company has a department manned by mutes. Two blind men were found in the plant of a large electric motor company at Springfield, Ohio. Fifty-one crippled employees were reported at the factory of an Ohio shoe company.

6. *Physical supervision.*—To direct the health affairs of employees competently, physicians should reexamine them with sufficient frequency and thoroughness to be at all times familiar with their

conditions of health. How often these reexaminations should be made depends somewhat upon the conditions of the individuals and the circumstances under which they labor. Process workers whose health is subjected to special hazards should be reexamined at least monthly, as required by law in some States. Employees who do not feel well or have the appearance of illness should be examined; also those whose output becomes less than usual, except when for reasons that are evidently not physical. Pathological conditions known to exist should be checked up by occasional observations. In justice to both employers and employees, process workers should be examined before being permitted to leave the services of their companies, as is done at a large storage-battery company in Ohio. Employees who have been incapacitated by illness or injury should be examined before reassignment to work. Workers who apply for reemployment should be caused to pass through the same routine as new applicants.

7. *Protection from the communicable diseases.*—While it may not be possible for doctors to visit personally all employees each morning, it should be understood among foremen and workmen that any person who has a breaking out, or does not feel well, must report for diagnosis, and treatment if necessary. This service is very useful during epidemics. There should always be friendly cooperation between industrial medical departments and the public health authorities.

8. *Medical, surgical, and dental treatments when responsible for the conditions requiring such treatment.*—Laws have made employers responsible for injuries, and in some instances for specified diseases which workmen incur during and because of their employment. For the most part this work consists of trivial injuries that do not incapacitate and are susceptible to routine measures of treatment, such as the application of dressings, the removal of foreign bodies from the exposed surface of the eyeball, etc. Without going into details, for this subject will be given more consideration later, the chief function of industrial physicians in this connection is to assist sick and injured employees to recover as nearly as possible their normal conditions of health or body with as little loss of time as is consistent with satisfactory progress.

9. *Medical and dental prophylaxis.*—This is health instruction by practical demonstrations applied in the treatment of those trivial ailments for the relief of which people rarely seek professional advice. They are those ailments which occur among industrial workers, as well as others, through neglect of their bodies; as, for instance, headaches, constipation, bad teeth, etc. This activity has been proven particularly effective in showing the working people how to care for their teeth, which they seem almost universally to neglect.

10. *Proper nourishment, at cost or otherwise, during the working day.*—To obviate the bad effects of a cold lunch washed down by cold water, or the bolted meal after a hurried trip home, employers are coming more and more to provide restaurants or cafeterias, where their employees may secure good food at moderate prices. They are also setting up stations from which milk, coffee, or soup may be distributed for morning or afternoon refreshments. For luncheons, physicians are in a position to suggest menus that are adapted to the needs of the employees. Through cooperation with the health officials they are able to assist in the selection of safe food and milk supplies. They may exercise supervision over the sanitation of the kitchens and watch for the presence of transmissible diseases among the food handlers.

11. *Time and facilities for rest and recuperation.*—Many establishments have rest rooms for the use of their employees, especially those in which women are engaged. Means of recreation are also supplied. Which employees need rest or exercise, when they should have it and for how long a period, and if it be exercise, what kind is required, are proper questions for industrial physicians to decide. A few concerns have country clubs or sanatoriums where run-down people may be placed for restoration. To whom this privilege should be extended and the conditions under which the restoration periods should be spent are also questions for the doctors to decide.

12. *Instructions in how to keep well and avoid injuries.*—The safety-first movement has impressed employers with the value of instruction in the prevention of accidents. They perceive also the value of instruction in the prevention of sickness, and they must rely upon physicians to conduct the instruction. Whether it should be imparted by personal talks, lectures, bulletins, or otherwise depends upon circumstances and the personality of the physicians. Certainly this is a field that is rich in opportunities for preventive medicine.

13. *Opportunities for education and advancement.*—Special courses planned to prepare industrial workers for advancement are being offered and are proving popular. These give physicians excellent openings to impress ambitious workmen with the value of their health, especially in its relation to their abilities to advance to better jobs and hold them.

14. *Assistance in adjusting social and financial difficulties.*—There is a tangible relation between the home and community lives of working people and their industrial efficiency. The greatest worries that beset employees are those which belong to their private affairs, yet they are of definite interest to those employers who realize that worry is capable of absorbing a tremendous amount of a workman's attention to his job. It must be remembered that when troubles come into the lives of the workers they are big and engrossing, and

that the persons who lend assistance at those times gain life-long affections.

While listening to other folks' troubles is not a function of medicine it has become an obligation to physicians whether in home or factory; it is a tribute the whole world pays the doctor. Thus it is that the physician is the one person in the industrial organization to whom the workers may feel inclined to go with their troubles. Because of this feeling toward them doctors have opportunities to help employees as no employers can, and chances to gain for the latter the good will they so much desire and find is otherwise difficult to obtain.

15. *The encouragement of thrift, domesticity, morality, and sobriety.*—By the encouragement of these qualities in their working forces employers endeavor to prevent the occurrence of social and financial problems among them. The lack of thrift, domesticity, morality, and sobriety eventuate in health problems.

RELATIONS OF MEDICAL DEPARTMENTS TO INDUSTRIAL ORGANIZATIONS.

Medical departments and physicians, where no departments exist, were found to derive their authority from a surprising variety of officials and other departments. Those officials, or departments, together with the number of concerns in which the responsibility is so fixed, are mentioned as follows:

Superintendent or works manager	70
General manager	17
President or vice president	13
Director of welfare	11
Legal, compensation, or claim department	9
Employment manager	4
Service department	3
Relief department	4
Treasurer	2
Industrial service manager	1
Paymaster	1
Employment and welfare manager	1
Office manager	1
Safety, compensation, and hospital department	1
Director of production	1
Relief, surgery, and employment department	1
Safety department	2
Engineer (mechanical)	1
Department of industrial relations	1
Director of plant administration	1
Secretary-treasurer	1
Auditor	1
Clerks (these report injuries to insurance companies or commissions and issue compensation checks—usually in concerns which have no fixed medical service)	23

As the duties of several of these are the same or similar, a more simple method for classification is by function, which follows:

Production (superintendent or works manager, director of production)	71
Compensation (legal, compensation, or claims departments, treasurer, secretary-treasurer, auditor, clerks)	36
Administration (president, general manager, director of plant administration)	31
Labor relations (director of welfare, employment manager, service department, relief department, industrial service manager, paymaster, employment and welfare manager, safety, compensation and hospital department, relief, surgery, and employment department, and department of industrial relations)	28
Miscellaneous (office manager, safety department, and engineer)	4

The placing of medical departments in some industrial organizations appears to have been brought about by the vagaries of evolution and the interests of certain officers, rather than by the application of logic. The development of one is illustrative. The rapidly growing demand for its product was causing the officials of an automobile company to devote their time and attentions chiefly to the devising of means for the production of automobiles in sufficient numbers to meet the demand. Large sums of money had to be obtained, huge buildings had to be constructed, and many workmen had to be hired.

Somewhat abruptly they came to realize that expenditures for compensation to injured employees had become considerable and were mounting. Apparently they concluded that they were compensating unnecessarily. At any rate, in casting about for a remedy, they decided to employ a claim adjuster, selecting for that position a very clever adjuster then employed by an employers' liability insurance company. Evidently this man believed in the prevention of claims rather than in their adjustment. He initiated safety work, and subsequently was instrumental in obtaining a good dispensary and a proficient medical staff. The medical department continues to operate under his authority and is engaged mainly in the treatment of injuries.

Two instances were noted of doctors who gradually expanded their activities until one is now in charge of an employees' service department, his own creation, and the other is directing an employment department, so called, which has the duties of a service or welfare department, also of his creation.

Reverting to the analysis by functions it appears that 42 per cent of the medical departments visited are responsible to officers who have supervision over production, 21 per cent to officers who compensate for injuries, 18 per cent to administrative officers, and 15 per cent to those who direct employment and labor relations.

The position a medical department should occupy in an industrial organization would seem to depend upon the purpose for which it is used. If the purpose is to facilitate production, it should be responsible to the superintendent or such other officer as has direct charge of production. If the medical service is mainly expected to reduce claims for compensation, it should derive its authority from the officer who handles the claims. If the object is to assist in stabilizing the laboring forces, it should be answerable to the officer whose duty that is. If the purpose of the medical department is broad and includes activities that concern several or all of the functions which are necessary to manufacturing, it should be accountable to the directing head only.

Being physicians and having a monopoly on medical knowledge, industrial doctors are quite apt to be endowed by their managements with a wide range of privileges. Because of this they are able themselves to determine, in a great measure, the importance of their departments and the relation they should bear to other departments. In any event, medical departments should be so placed as to favor correlation and the greatest possible degree of cooperation.

THE PERSONNEL OF INDUSTRIAL MEDICAL DEPARTMENTS.

Employers are perplexed by two questions that are fundamental to medical service within their establishments. One concerns only those employers whose workmen are relatively few in number. It is, How much of a physician's time does the care of the employees warrant? The other is, How much of a medical organization is justified and of whom should it consist?

To obtain information that might be used in answer to these questions and which might possibly suggest standards, analyses have been made of the medical personnel of establishments classified according to their approximate numbers of employees.

TABLE 1.—*Personnel in establishments of 500 employees and less.*

Approximate number of employees.	Dispensary.	Physicians.				Attendants.		Products manufactured.
		Consulting.	Whole-time.	Part-time.	On call.	Trained female nurse.	Experienced male.	
400	No				1			Airplanes.
145	No				1			Airplane propellers.
200	No				1			Seeders.
300	No				1			Ship engines.
500	No				1			Shoes.
500	Yes				1			Seeders.
300[1]	Yes				1			Pig iron.
500	Yes			1		1		Motors.
500	Yes				1	1		Newspaper.
350	Yes				1		1	Car trucks.
450	Yes			1		1		Bearings.
500	Yes			1		1		Do.
400	Yes			1			1	Pulleys.
200[1]	Yes			1			1	Pig iron.
400[1]	Yes			1		3		Iron and steel.
500	Yes		1					Rubber tires.
400[1]	Yes	1	3					Shells.
Total[2]	(3)	1	2	6	9	5	3	17

[1] Running day and night.

[2] The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments.

[3] 12 have dispensaries, 5 have not.

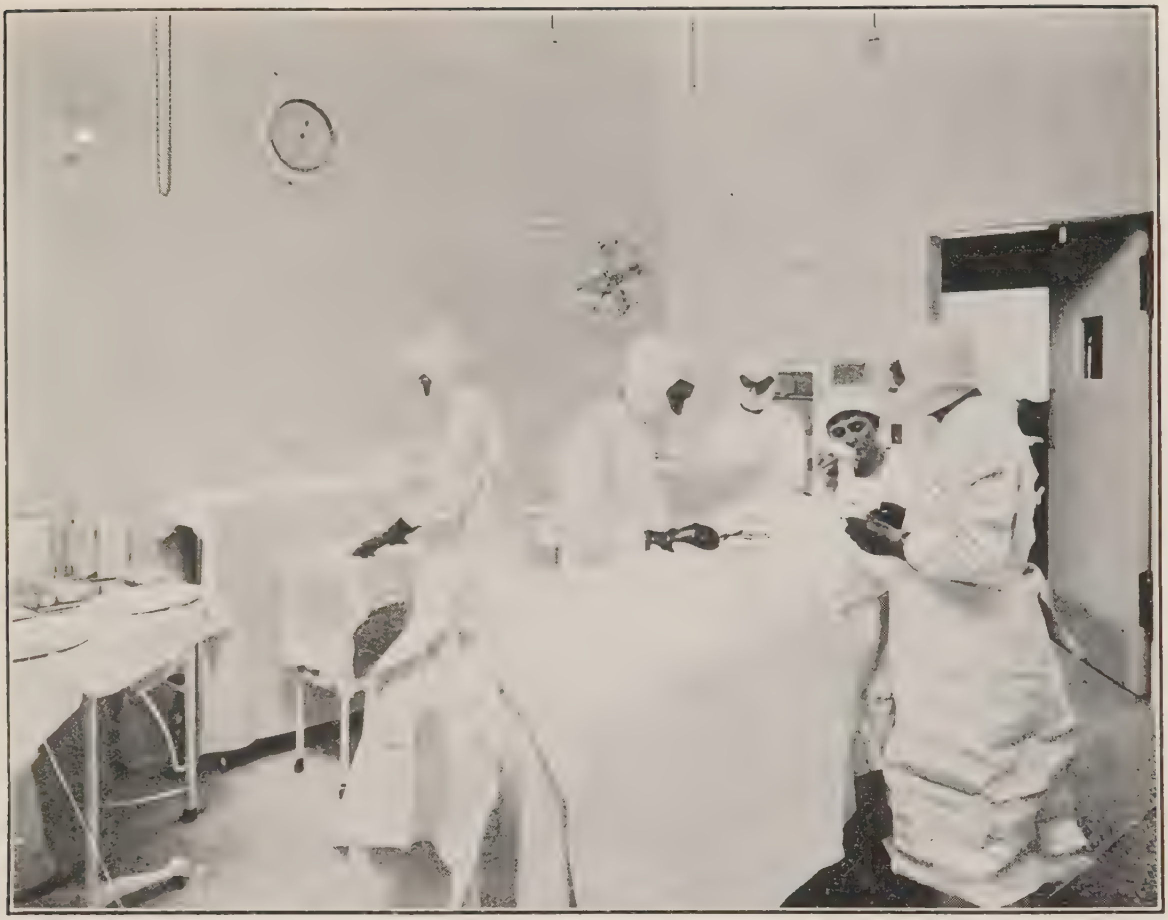

Fig. 1.—Expert surgical attention, promptly rendered, reduces lost time and minimizes the effects of accidental injuries. An operation in the dispensary of The Western Electric Co.

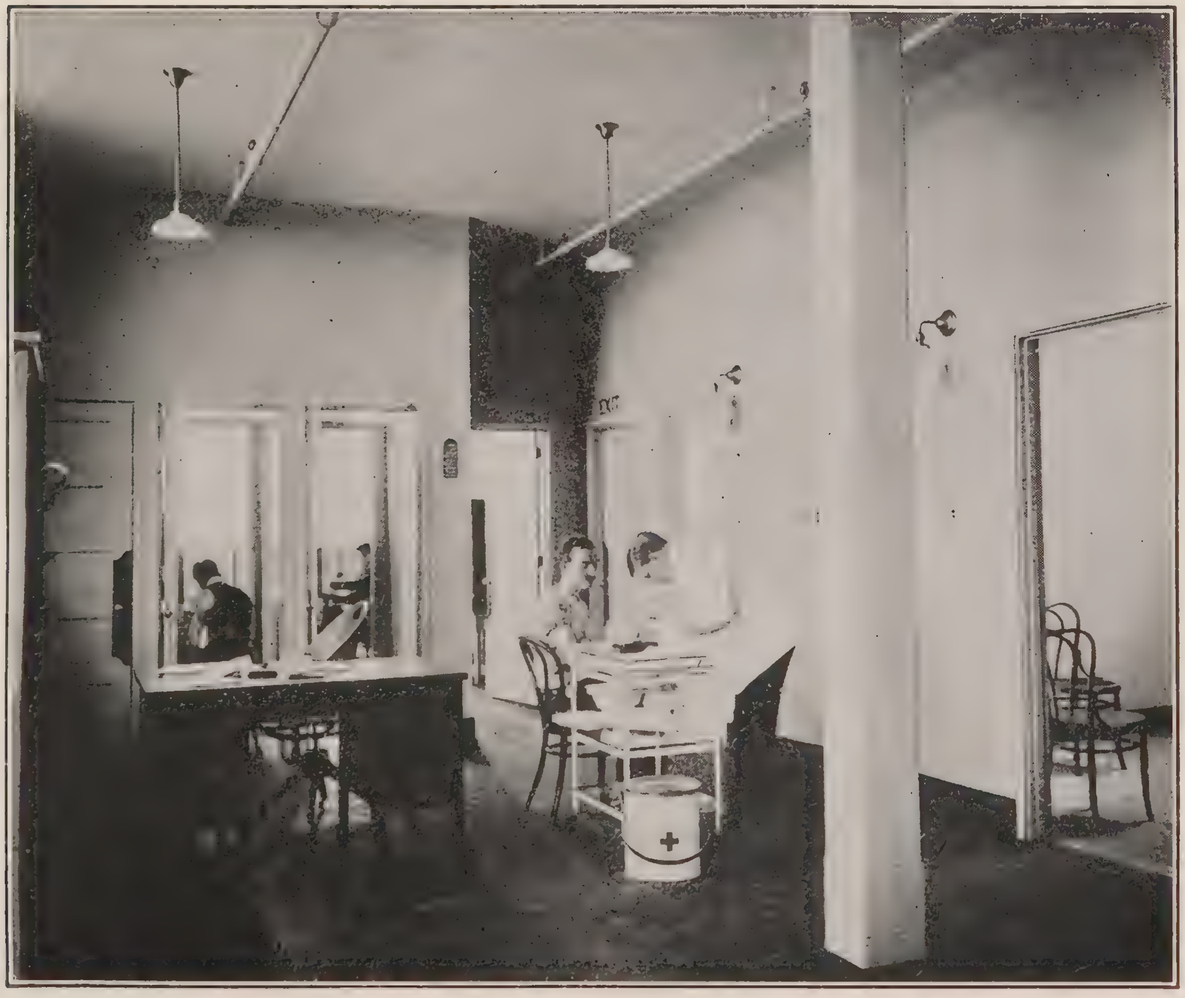

Fig. 2.—Treating a trivial injury in the dispensary of The Graton & Knight Manufacturing Co., Worcester, Mass. The doctor is in the office beyond, waiting to examine the man seated in the disrobing compartment.

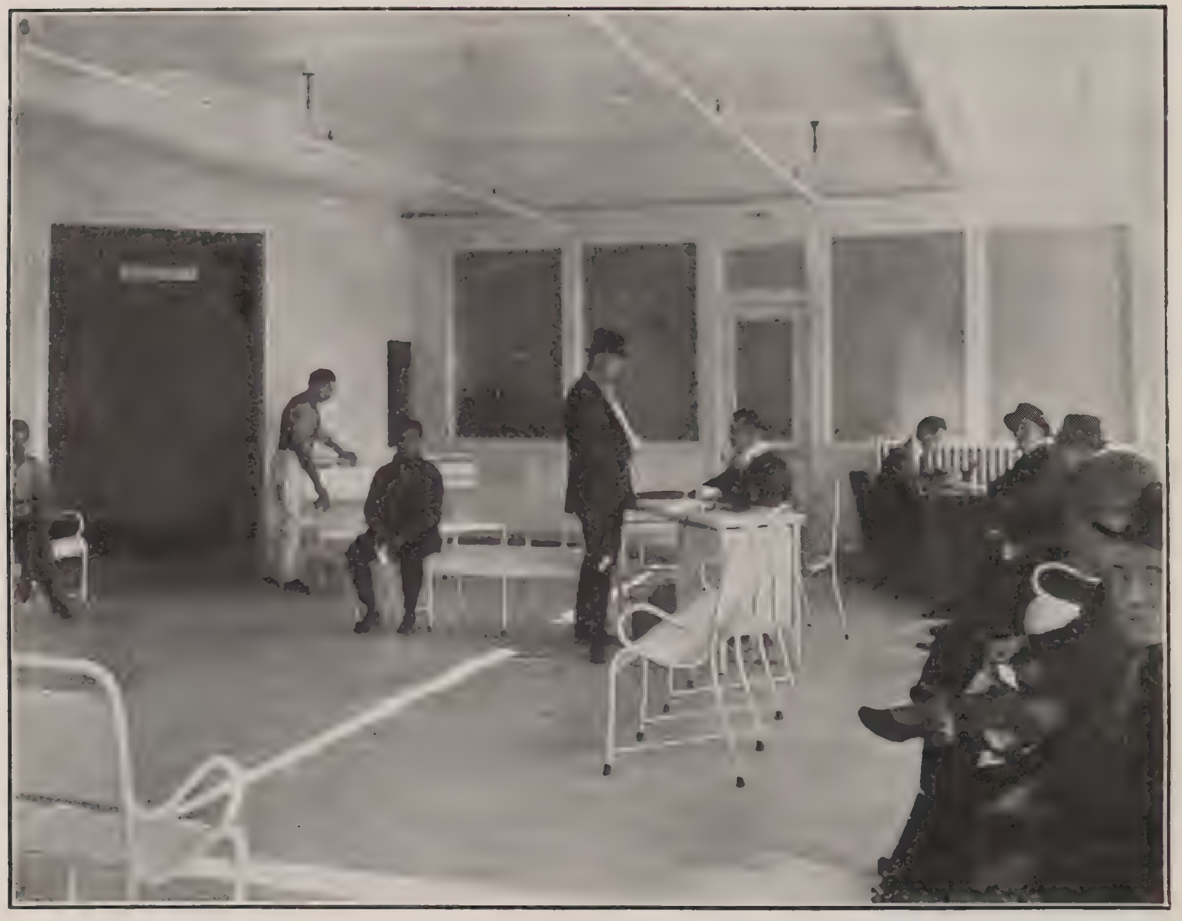

Fig. 3.—Waiting room of busy dispensary. Prompt attention prevents the unstabilizing effects on labor of infections in trivial injuries.

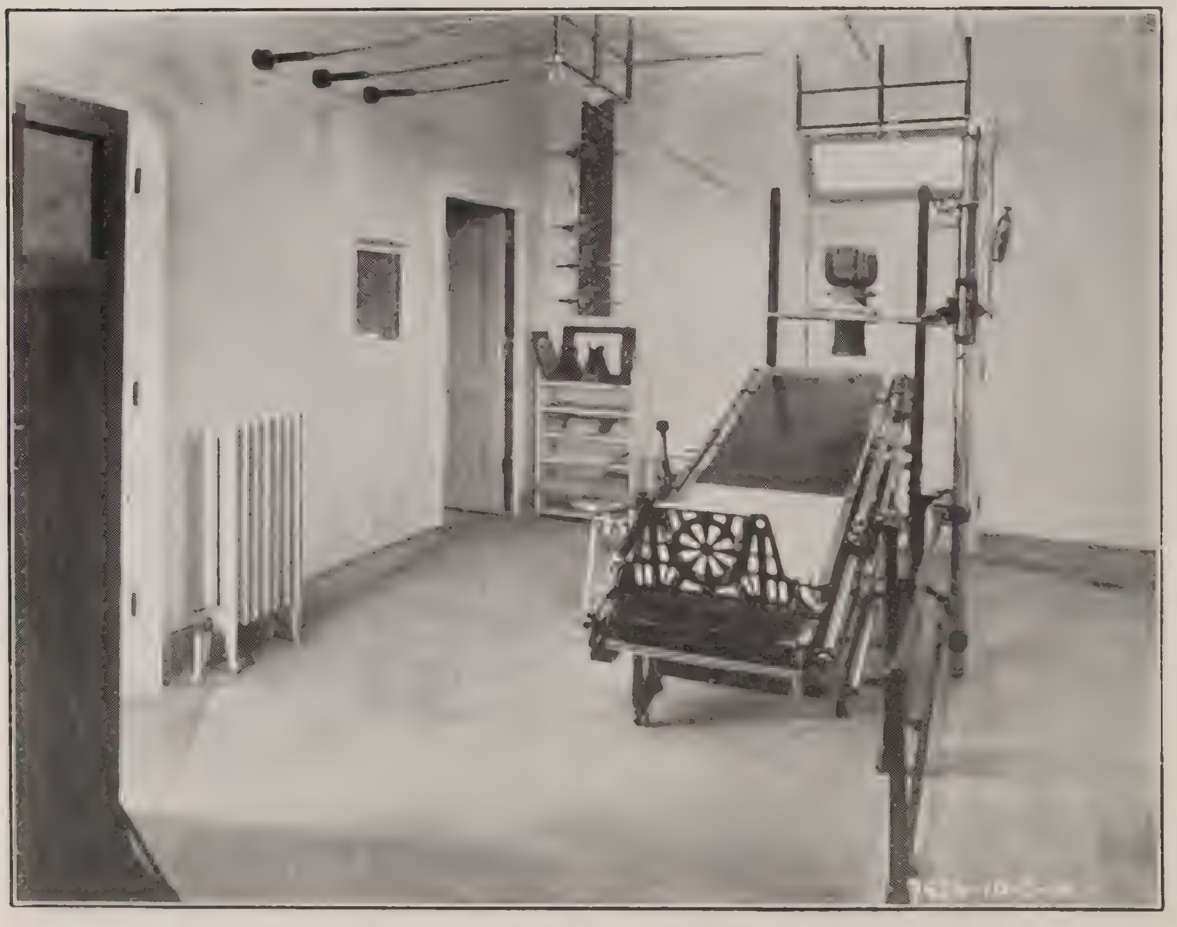

Fig. 4.—A well-equipped industrial X-ray room. Adequate quarters and good equipment enable industrial physicians to do their work easily, quickly, and thoroughly.

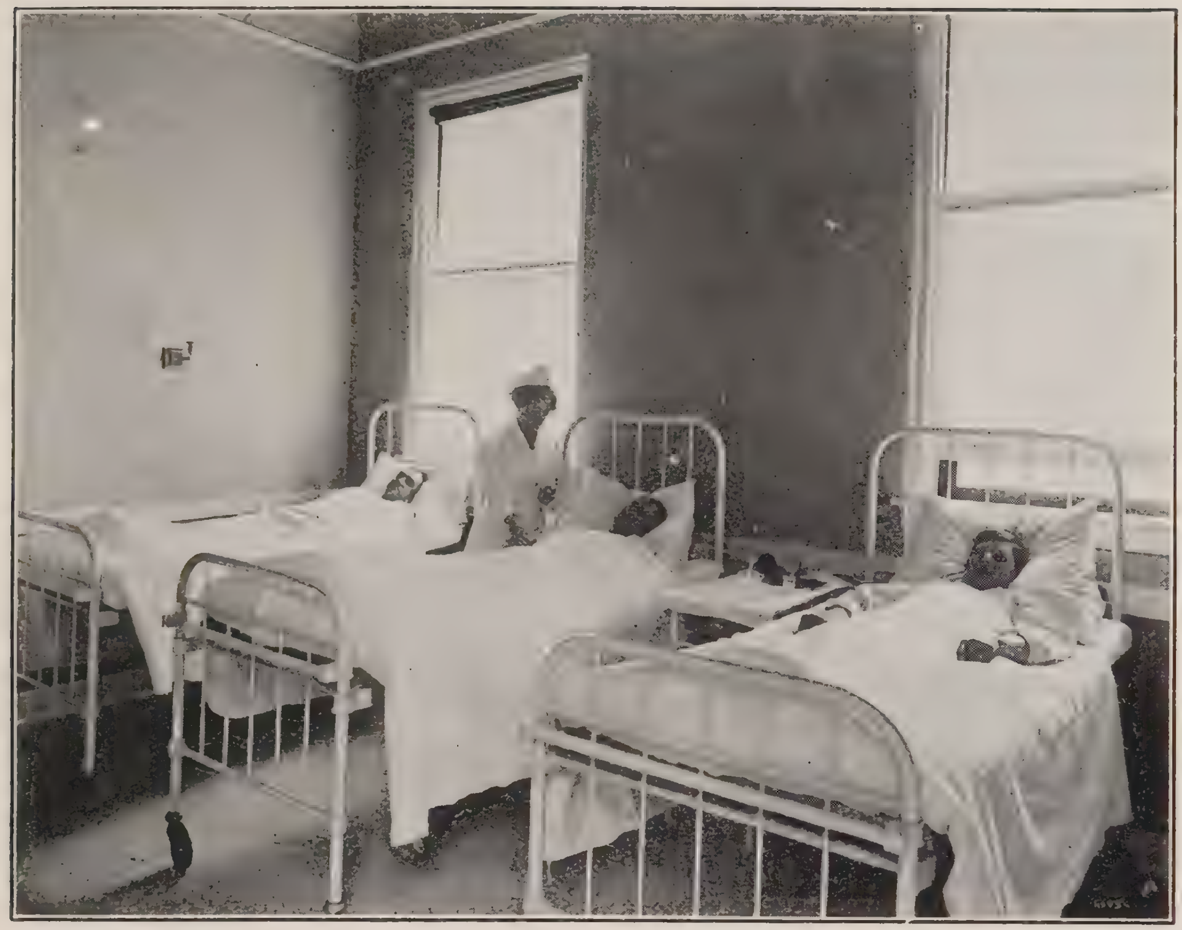

Fig. 5.—View of ward in an industrial dispensary, a place where painstaking details are necessary.

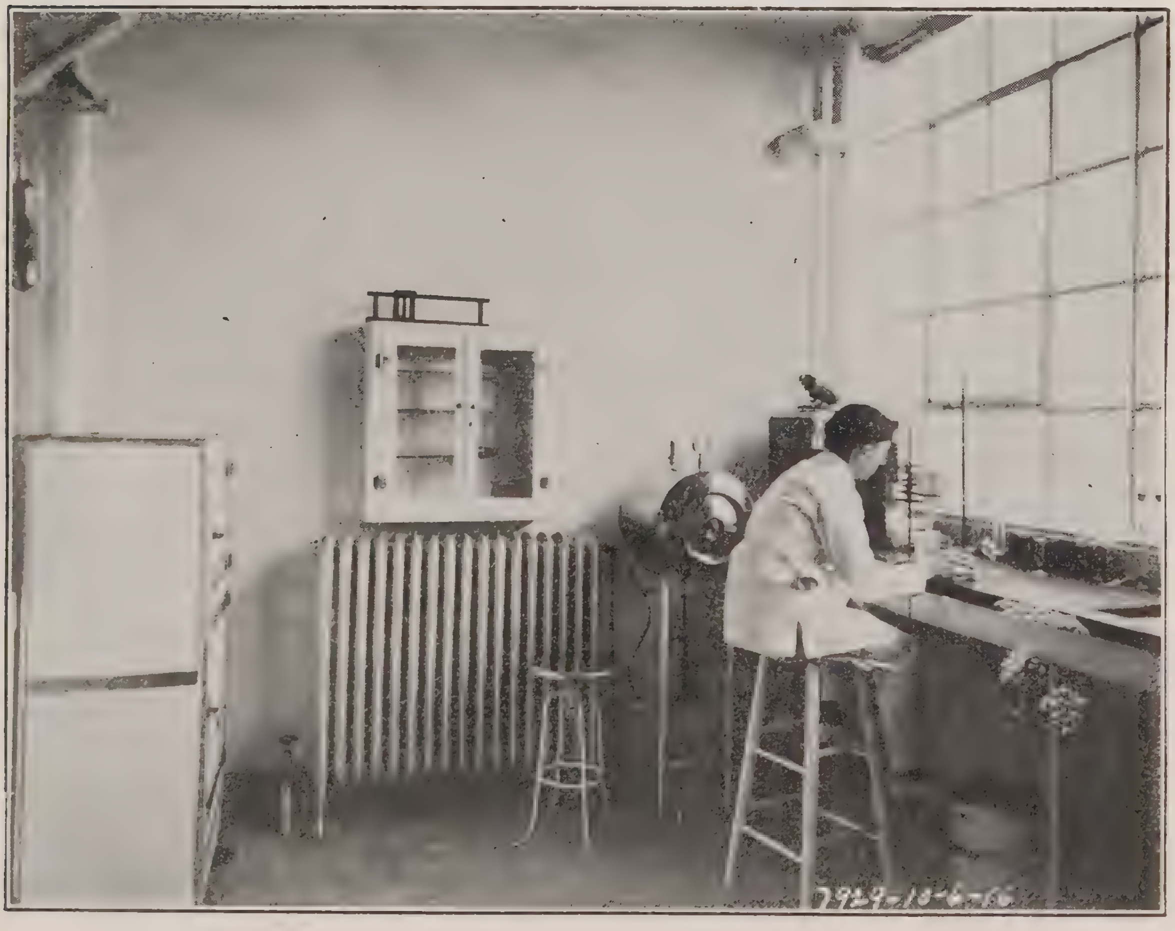

Fig. 6.—Scientific laboratory studies are essential to the success of industrial physicians.

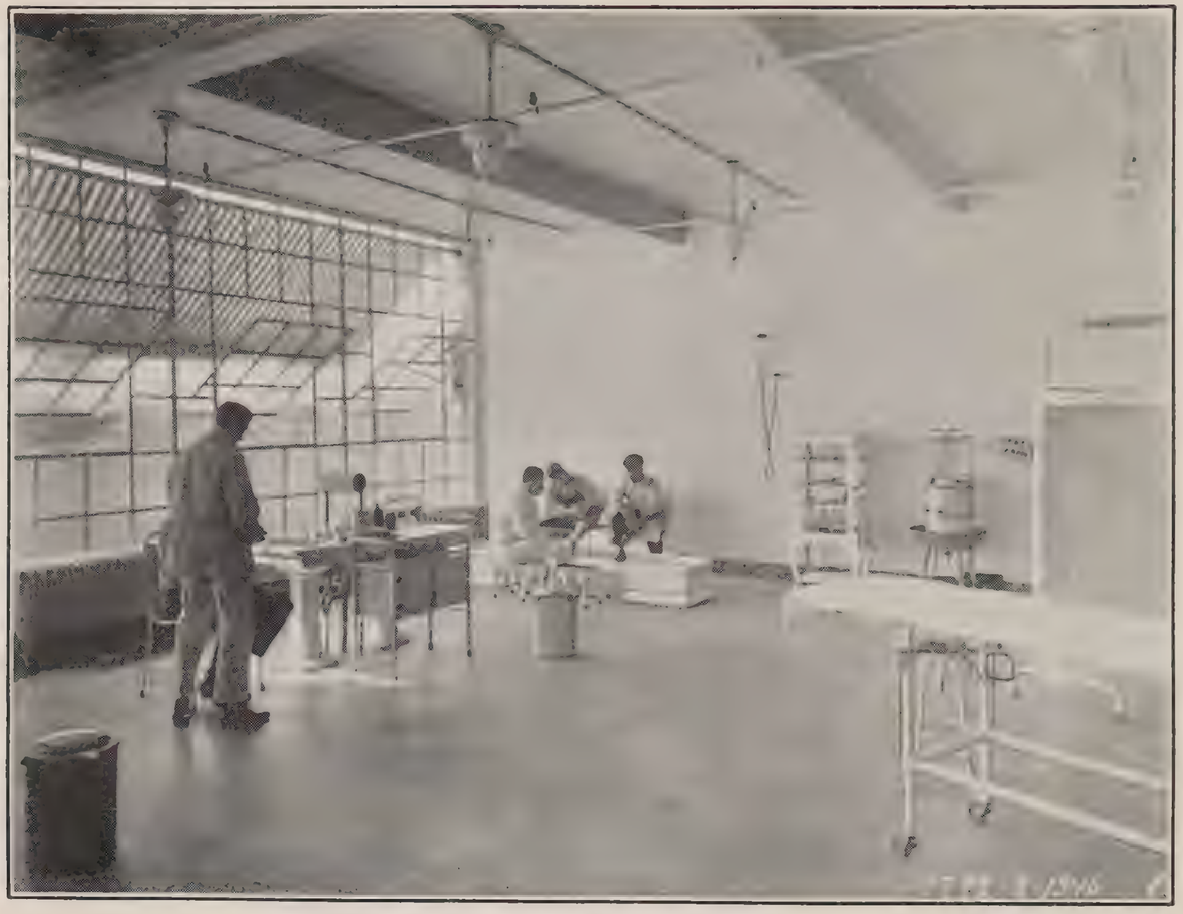

Fig. 7.—Dressing of trivial injuries.

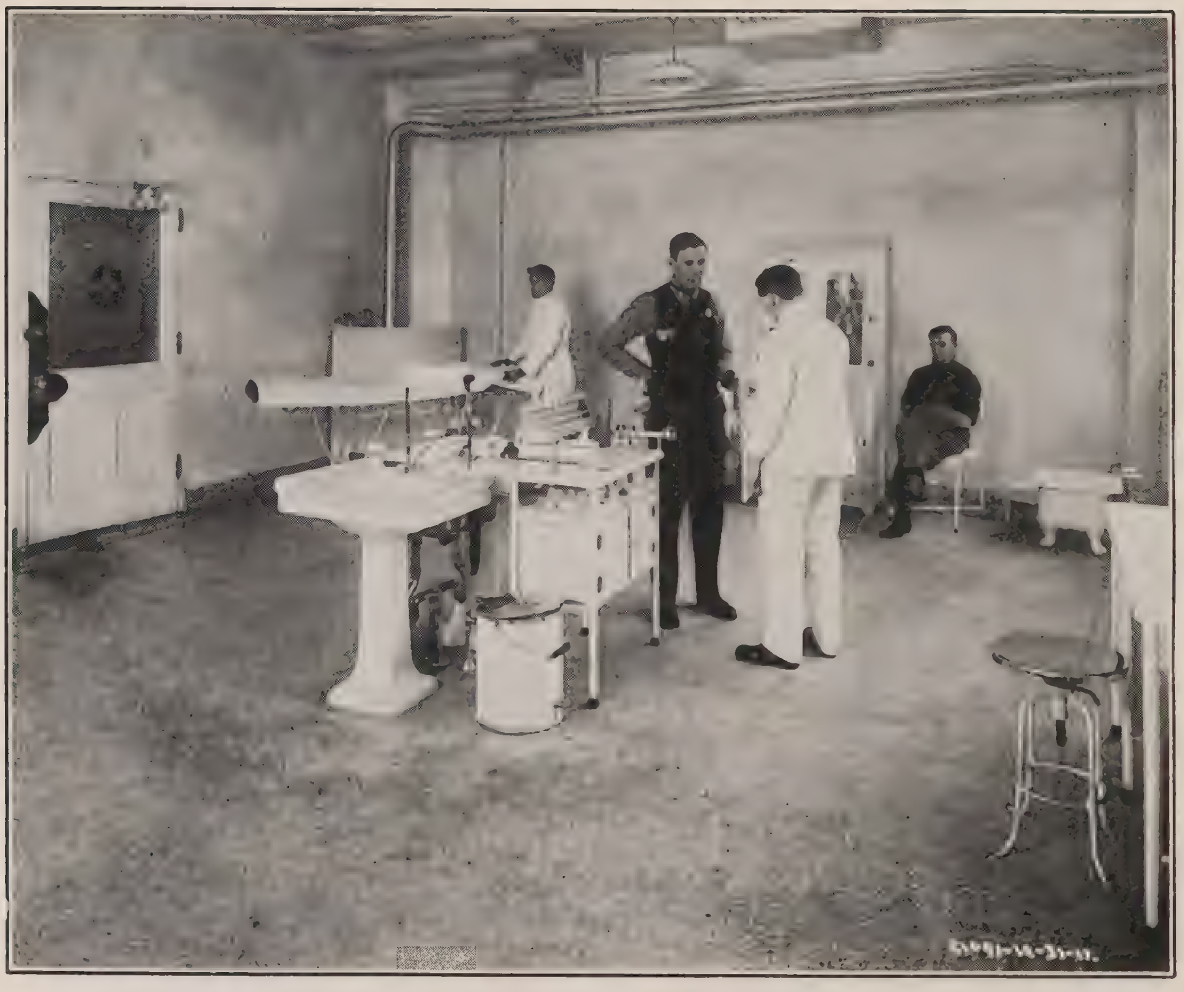

Fig. 8.—Attendants at work in a dressing station at the Detroit plant of The Ford Motor Co. Note the tidy appearance the white clothes give. Note also the dressing unit.

Seventeen establishments are represented in Table 1, a number which may seem offhand to be insufficient to justify conclusions. Nevertheless certain facts are evident, and they are as follows:

1. Two employers, one having 500 workmen and the other 400, feel warranted in engaging the whole time of physicians. In the instance of the one who has 500 workmen, the doctor also directs the safety work. With the other the doctors as well as the employees work in shifts, which make the number of workmen actually less than 200 per physician.

2. Six employers feel warranted in using parts of the time of physicians. Reference to the original reports shows that this varies from a brief visit to one-half of a day and depends more upon the initiative of the doctors in finding useful work to do than upon the accident hazards of the industries.

3. In all six of the establishments where part-time physicians are used, the employers provide assistants, in four instances trained female nurses and in two, experienced male attendants. It appears that the whole-time doctors need no assistants.

4. Twelve of the establishments have dispensaries and 10 of these have either doctors or attendants constantly in waiting.

Although possibly no conclusions should be drawn from these facts, they suggest that: (*a*) An establishment employing anywhere from 200 to 500 people is warranted in having a dispensary; (*b*) that such an establishment is justified in having either a whole-time or part-time physician; and (*c*) that if he be on a part-time basis, his services may advantageously be augmented by a trained female nurse or a person who has been taught to handle the routine work under his direction.

NOTE.—It has been observed that the accident hazards of the various trades have little bearing upon the value of medical service in small establishments and only slight influence upon the time a doctor may properly give to a place. The real measure is in the physician's ability to make himself useful in the application of the principles of preventive medicine.

TABLE 2.—*Personnel in establishments of 500 to 1,000 employees.*

Approximate number of employees.	Dispensary.	Physicians.				Dentist.	Attendants.			Clerk.	Products manufactured.
		Consulting.	Whole-time.	Part-time.	On call.		Trained female nurse.	Experienced female.	Experienced male.		
600	No				1						Shoes.
800	No				1						Glass tumblers.
700	No				1						Auto lamps.
900	No				1						Trucks.
750	No				1						Mining machinery.
800	No				1						Paints.
750	Yes				1			1			Playing cards.
1,000	Yes				1		1	1			Chains.
700	Yes				1						Leather.
800 [1]	Yes				1				2		Iron castings.
800	Yes				1		1				Clothing.
700 [2]	Yes				1		2				Motors.
800	Yes				1						Locomotives.
800	Yes				1	1	1			1	Light bulbs.
875	Yes			1							Belting.
700	Yes			1		1			1		Drugs.
800	Yes			1			1				Tractor parts.
600	Yes			1			1				Auto bodies.
900 [1]	Yes			1			1			1	Pig iron.
620 [1]	Yes			1					1		Do.
900	Yes			1					1		Freight cars.
750	Yes			1			1				Auto springs.
625 [3]	Yes		2								Planers.
614	Yes		1								Lathes.
800	Yes		1				1				Farm machinery.
750 [1] [4]	Yes		2	1						2	Benzol products.
600 [1]	Yes	1	2								Shells.
Total [5]	([6])	1	5	9	14	2	9	2	4	3	27

[1] Running day and night.

[2] 1 nurse calls on sick absentees.

[3] 2 part-time doctors jointly furnish a whole-time service.

[4] The part-time doctor directs the department.

[5] The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments; that in which a part-time physician is employed in addition to whole-time physicians is classified as having whole-time service, and that in which two varieties of attendants are employed is classified according to the variety upon which the greater dependence is placed.

[6] 21 have dispensaries; 6 have not.

Twenty-seven establishments are represented in Table 2. The evident facts are as follows:

1. Five employers have whole-time medical service. One of these, with 750 workmen, has a chief physician in addition to two residence doctors. He visits the plant at a stated time daily to see the unusual cases and to supervise the work. Another, with 625 employees, obtains a whole-time medical service by engaging two physicians on a part-time basis. Two places running day and night each secure whole-time medical service through two physicians who divide the 24 hours between them, making in one instance 300 workmen per physician and in the other 375.

2. Eight have part-time medical service, the duration, as in those of Table 1, depending upon the demands which the doctors have succeeded in creating for their services.

3. Fourteen, or more than half, are content with a medical service which they obtain by summons. Six of these, however, are compromising by having attendants constantly in waiting.

4. Two have dentists. Reference to the original reports show that one is present during one-half of the working-day; this establishment employs chiefly girls and although the dental service is limited to

prophylaxis, it is greatly in demand among them. The other spends a varying amount of time depending upon the work to be done; this company employs about 700 people.

5. Assistance is provided in two whole-time departments, being in one instance a trained female nurse and in the other clerical aid Seven of the eight part-time physicians are given assistants, four of them being trained female nurses and three being men who have learned to carry on the routine work. In one place, a clerk is provided in addition to a trained female nurse.

6. Twenty-one of the 27 have dispensaries, and 19 of these have either doctors or attendants constantly present.

The conclusions that were suggested by the facts elicited from Table 1 apply also in the consideration of the facts apparent in this table, with possibly these additions: (*a*) That the employment of a part-time dentist for prophylactic service is warranted; (*b*) that assistance may be provided for whole-time physicians and certainly should be provided for part-time doctors; and (*c*) that the employment of a clerk may be justified.

NOTE.—The fact that more than one-half of the establishments obtain medical service by calling their doctors when needed does not argue for a service of that character. It simply means that, in places which have no dispensaries, the employers are taking care of injuries only and in what was formerly considered to be the cheapest manner possible and that, in places which have dispensaries but attendants other than doctors, they are substituting the attendants for physicians in the care of trivial injuries.

TABLE 3.—*Personnel in establishments of 1,000 to 1,500 employees.*

Approximate number of employees.	Dispensary.	Physicians.				Attendants.				Clerk.	Products manufactured.
		Consulting.	Whole-time.	Part-time.	On call.	Trained female nurse.	Experienced female.	Experienced male.	Trained male nurse.		
1,300	No.				1						Ships.
1,200	No.			1							Storage batteries.
1,300	Yes.				1	1					Valves.
1,300	Yes.				1	1					Cans.
1,500 [1]	Yes.				1		2				Stamping shells.
1,200 [1]	Yes.			1				1			Illuminating gas.
1,200	Yes.			1		1					Sewing machines.
1,500	Yes.			1							Saws.
1,100	Yes.			1			1				Clothing.
1,100 [1]	Yes.			1		2					Steel products.
1,200 [1]	Yes.			1				1			Do.
1,200	Yes.			1		1				1	Auto ignition.
1,300	Yes.		1				1				Rubber goods.
1,200	Yes.		1					1			Pumps, shells.
1,300	Yes.		1								Auto parts, shells.
1,500	Yes.	1	1					1		2	Pigments.
1,200	Yes.		1			1				1	Hats.
1,100	Yes.		1					1			Iron castings.
1,200	Yes.		1						1		Automobiles.
Totals [2]	(3)	1	7	8	4	6	3	5	1	3	19

[1] Running day and night.

[2] The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments.

[3] Seventeen have dispensaries; two have not.

Nineteen establishments are represented in Table 3. The evident facts are these:

1. Seven places have whole-time doctors, more than one-third.

2. Eight have part-time doctors, which number is proportionately smaller than in Table 2 (establishments having 500–1,000 employees).

3. Four, or about one-fifth, have doctors on call, and three of these have dispensary attendants.

4. Assistants are provided in six of the seven whole-time departments, in six of the eight part-time departments, and in three of the four whose doctors are obtained on call. As usual the trained female nurse predominates in number.

5. Seventeen of the 19 places have dispensaries, in all of which except one some person is constantly in attendance. One of the places which have no dispensaries has a part-time doctor, rather an anomalous situation. This plant is isolated. It has a lead hazard. The doctor visits it at stated times to examine in improvised quarters the lead workers, as is required by law in that State.

6. Clerks are provided in three of the whole-time departments.

The conclusions that were suggested by the facts derived from Tables 1 and 2 apply also to the facts apparent in this table. The absence of a dentist in these establishments, as may be noted, does not necessarily indicate that dental service is not warranted, the argument being that if it is feasible in a smaller establishment it certainly should be desirable in establishments of this class.

TABLE 4.—*Personnel in establishments of 1,500 to 2,000 employees.*

Approximate number of employees.	Dispensary.	Physicians.			Dentists.	Attendants.			Clerk.	Products manufactured.
		Whole-time.	Part-time.	On call.		Trained female nurse.	Experienced female.	Experienced male.		
2,000	No			1						Ships.
2,000	No			1						Shoes.
1,800	Yes			1		1				Ships.
2,000 [1]	Yes			1		3				Brake shoes, shells.
1,600	Yes		1			1				Auto rims, shells.
1,700 [1]	Yes		1			2				Car wheels, shells.
1,800	Yes		1			2				Oil stoves.
1,700	Yes		1			1	1			Filing cabinets.
2,000	Yes		2		1	2				Airplanes.
2,000 [1]	Yes		1			2		1	1	Steel products.
2,000	Yes		1		1		1			Food products.
1,600	Yes		1			2				Socks, etc.
1,700	Yes		1		1	2			1	Retail goods.
2,000 [1]	Yes		1			1			1	Steel sheets.
1,775	Yes	1								Iron castings.
1,800	Yes	1								Mines.
1,800 [2]	Yes	2			1	1			2	Milling machines.
2,000	Yes	1						1	1	Automobiles.
1,800 [1]	Yes	1				3				Forgings.
2,000 [1]	Yes	1				3				Shells.
1,800 [1]	Yes	1	2			1		1	1	Car couplings.
Totals [3]	(4)	7	10	4	4	15	1	1	6	21

[1] Running day and night.

[2] One of the physicians acts as the director of an employees' service department as well as chief of the medical.

[3] The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments; that in which part-time physicians are employed in addition to a whole-time physician is classified as having whole-time service, and those in which two varieties of attendants are employed are classified according to the variety upon which the greater dependence is placed.

[4] Nineteen have dispensaries; two have not.

The outstanding facts in Table 4 are two: (1) One whole-time doctor seems to be sufficient for plants of this size; (2) part-time physicians still predominate, although there seems to be a tendency to provide additional help for them.

TABLE 5.—*Personnel in establishments of 2,000 to 4,000 employees.*

Approximate number of employees.	Dispensary.	Physicians.				Attendants.		Clerk.	Products manufactured.
		Consulting.	Whole-time.	Part-time.	On call.	Trained female nurse.	Experienced male.		
2,400	No				1				Shoes.
2,500	No				1				Bearings.
2,300	Yes				1	2			Motors.
3,600	Yes				4	2	2		Adding machines.
2,100	Yes		1	1		1	2	3	Storage batteries.
2,200	Yes			1		1			Dies, taps.
2,500	Yes	1		1			1	1	Storage batteries.
2,200	Yes			1		3			Nuts, bolts.
2,500	Yes			1			2	1	Belting.
3,500	Yes			1		1	1		Automobiles.
4,000	Yes			1		1	1		Magazine.
3,200	Yes			1		1			Brass goods.
3,500 [1]	Yes	1		1		2	1		Steel products.
4,000 [1]	Yes			1			2	1	Do.
3,000	Yes	1	1				1		Cars.
2,800 [1]	Yes		1			1	2	1	Ships.
2,800	Yes		1			3		3	Rubber goods.
3,500	Yes		1			3		3	Toilet articles.
3,500 [1]	Yes	1	1					1	Saws, files.
4,000	Yes		2			1	1		Auto bodies.
3,500	Yes		1						Drugs.
3,600 [1]	Yes		1			3		2	Steel products.
3,500	Yes		1			2	2	1	Locks.
3,700	Yes	1	1			2	1		Airplane parts.
3,500	Yes	1	1			3		1	Conveyers.
3,900 [1]	Yes		2			1			Brakes.
Totals [2]	([3])	6	13	19	4	18	13	11	26

---

[1] Running day and night.

[2] The figures in the columns indicate the number of the personnel. The totals indicate the number of establishments; that in which a part-time physician is employed in addition to a whole-time physician is classified as having a whole-time service, and those in which two varieties of attendants are employed are classified according to the variety upon which the greater dependance is placed.

[3] Twenty-five have dispensaries; 2 have not.

The dominant facts evident in Table 5 are: (1) Six establishments have consultants, who have more or less supervision over the departments. They differ from surgical and other consultants in treatment, who are not regarded as being attached to industrial medical departments; (2) whole-time medical service predominates among the establishments whose employees range from 3,000 to 4,000 in number; (3) only one of the 23 places which have dispensaries depends upon a detached medical service; (4) apparently expansion of medical service, at least to meet the demands for 4,000 employees, may be obtained by increasing the number of attendants rather than doctors.

The noticeable facts in Table 6 are: (1) The oddity of a concern employing 7,000 people and providing a primitive medical service and no dispensary for them; (2) the predominance of whole-time medical service; (3) The beginning evidence of lack of uniformity in the numbers and variety of personnel in large establishments.

TABLE 6.—*Personnel in establishments of 4,000 to 10,000 employees.*

Approximate number of employees.	Dispensary.	Physicians.				Dentist.	Attendants.			Clerk.	Products manufactured.
		Consulting.	Whole-time.	Part-time.	On call.		Trained female nurse.	Experienced male.	Trained male nurse.		
7,000	No.				1						Auto bodies.
5,000	Yes.	1			1			1			Ships.
4,600 [1]	Yes.			1			3	1		1	Do.
4,600	Yes.			2			3			1	Automobiles.
5,000	Yes.	1		1				1			Locomotives.
6,000 [1]	Yes.			1					2	2	Munitions.
6,500 [1]	Yes.			3			3				Steel products.
4,200	Yes.		2	2							Rubber tires.
5,000 [1]	Yes.	1	1	1				2		2	Cars.
5,000 [2]	Yes.		3				5			2	Emery wheels.
6,000	Yes.	1	1					2		1	Generators.
7,000 [1]	Yes.		1	2			4				Coke, munitions.
7,000 [1]	Yes.		4				3			3	Petroleum products.
6,000	Yes.		3				2			2	Valves.
7,000	Yes.		1	3		1	2			1	Retail goods.
7,500	Yes.		3			2	3			5	Farm machinery.
8,000	Yes.		1	2			5			3	Cameras.
8,000	Yes.		5				1	6			Automobiles.
7,700	Yes.	1	2				2			2	Cars.
8,000 [1]	Yes.		3	1			3	2		3	Ships.
10,000 [1]	Yes.	1	4					4		2	Steel products.
10,000 [1]	Yes.	1	1				3				Do.
10,000	Yes.		4		1		2			2	Automobiles.
10,000 [1]	Yes.		2		1			1		1	Ships.
Totals [3]	(4)	7	17	5	2	2	14	7	1	16	24

[1] Running day and night.

[2] One director and two assistants, all on a part-time basis, with hours arranged to give continuous service.

[3] The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments; those which have part-time physicians or physicians on call in addition to whole-time are classified as having whole-time service, and those in which two varieties of attendants are employed are classified according to the variety upon which the greater dependance is placed.

[4] Twenty-three have dispensaries; 1 has not.

TABLE 7.—*Personnel in establishments of more than 10,000 employees.*

Approximate number of employees.	Physicians.				Dentists.	Attendants.				Clerk.	Products manufactured.
	Consulting.	Whole-time.	Part-time.	On call.		Trained female nurse.	Experienced female.	Experienced male.	Trained male nurse.		
11,000 [1]			1			4				1	Munitions.
12,000		7				4				5	Automobiles.
15,000			1						4		Locomotives.
11,000 [1]	1	5				6		9		2	Munitions.
12,500 [1]		4		1		3		2		3	Arms, ammunition.
12,000 [1]		1						2	4	2	Guns.
14,000		6			3	10				1	Rubber goods.
14,000 [1]		4				10				5	Steel products.
14,000		3					1			2	Motors.
15,000 [1]		5	1			5				3	Steel products.
14,000 [1]			2					7		1	Do.
14,000 [1 2]			8			3					Public utility.
14,500 [1]	1	7			1	4				3	Food products.
15,000		8		2	2	23	2			6	Rubber goods.
16,000 [2]		9				12					Do.
16,000	1	2	1			1		2		3	Automobiles.
18,000	1	2	4		1	14		2		9	Mail orders.
18,000 [1]		10				11				6	Electrical equipment.
18,000 [1 2]		10				3				1	Do.
30,000 [1]		4		1		26				4	Steel products.
36,000		8			1			32		9	Automobiles.
Total [3]	4	17	4	0	5	14	1	4	2	18	21.

[1] Running day and night.

[2] Clerical work in, done by other departments.

[3] All have dispensaries. The figures in the columns indicate the number in the personnel. The totals indicate the number of establishments; those which employ part-time physicians or physicians on call in addition to whole time are classified as having whole-time service, and those in which two varieties of attendants are employed are classified according to the variety upon which the greater dependence is placed.

Further evidence of a lack of uniformity in the size and variety of personnel appears in Table 7. Whole-time medical service more evidently predominates. The clerical work is absorbed in several instances by associated or governing departments.

TABLE 8.—*Summary of the personnel of all establishments, showing the kinds of service and the kinds of attendants.*

Approximate number of employees.	Dispensary.	No dispensary.	Physicians.				Dentist.	Attendants.				Clerk.	Total.
			Consulting.	Whole-time.	Part-time.	On call.		Trained female nurse.	Experienced female.	Experienced male.	Trained male nurse.		
500 and less	12	5	1	2	6	9		5		3			17
500 to 1,000	21	6	1	5	8	14	2	9	1	4		3	27
1,000 to 1,500	17	2	1	7	8	4		6	3	5	1	3	19
1,500 to 2,000	19	2		7	10	4	4	15	1	1		6	21
2,000 to 4,000	24	2	6	13	9	4		18		4		11	26
4,000 to 10,000	23	1	7	17	5	2	2	14		7	1	16	24
10,000 and more	21		4	17	4		5	14	1	4	2	18	21
Total	137	18	20	68	50	37	13	81	6	28	4	57	155

Table 8 shows a plurality in favor of a whole-time medical service and a majority in favor of a trained female nurse as a dispensary attendant. A trifle more than one-third have clerks (including stenographers).

TABLE 9.—*Average approximate number of employees per individual of personnel in whole-time medical departments.*

Approximate number of employees.[1]	Average approximate number of employees per individual of personnel.		
	Physician.	Attendant.	Clerk.
500 and less	225		
500 to 1,000	462	800	325
1,000 to 1,500	1,257	1,260	566
1,500 to 2,000	1,498	2,350	1,400
2,000 to 4,000	2,191	1,331	1,686
4,000 to 10,000	2,695	2,350	2,600
10,000 and more	3,094	1,497	4,138
Average of all	1,632	1,598	1,786

[1] These classifications refer to those in Tables 1 to 7, inclusive.

TABLE 10.—*Average approximate number of employees per individual of personnel in part-time medical departments.*

Approximate number of employees.[1]	Average approximate number of employees per individual of personnel.		
	Physician.	Attendant.	Clerk.
500 and less	408	306	
500 to 1,000	764	753	900
1,000 to 1,500	1,212	1,025	1,200
1,500 to 2,000	1,376	894	1,900
2,000 to 4,000	2,970	1,611	3,000
4,000 to 10,000	3,350	2,054	3,800
10,000 and more	3,500	3,000	5,286
Average of all	1,940	1,378	2,681

[1] These classifications refer to those in Tables 1 to 7, inclusive.

TABLE 11.—*Average approximate number of employees per individual of personnel of establishments that obtain medical service on call.*

Approximate number of employees.[1]	Average approximate number of employees per individual of personnel.			
	Physician—have dispensary.		Attendant.	Clerk.
	Yes.	No.		
500 and less	425	335	425	....
500 to 1,000	800	756	550	800
1,000 to 1,500	1,400	1,300	1,050	....
1,500 to 2,000	1,900	2,000	950	....
2,000 to 4,000	1,080	2,450	850	....
4,000 to 10,000	5,000	7,000	5,000	....
Average of all	1,767	2,307	1,471	....

[1] These classifications refer to those in Tables 1 to 7, inclusive.

Tables 9, 10, and 11 approach the problem from a slightly different angle. If any conclusions are to be derived from them they are: (*a*) That the larger the establishment the greater the number of employees the doctors and attendants are capable of providing service for, and (*b*) that the doctors, attendants, and clerks of part-time departments are able to serve less employees than those in which doctors are obtained on call, and those of whole-time departments less than those of part-time departments. The probable explanation of the first is that the larger the medical departments are the better systematized the work is. The explanation of the second is that part-time medical departments do more for the employees than doctors who visit their plants on call only and that whole-time medical departments do more than part-time departments.

In reviewing these tables for the purpose of definitely answering the questions that inspired the making of the analyses, the dominant impression is that standards of neither time nor personnel can be fixed. Although whole-time service exists in some establishments of all sizes, from those having an average of less than 200 employees per physician to the largest, and therefore may be considered as being feasible in small establishments as well as large, the fact that other places, small and large, seem to do very well on part-time service makes standards based solely upon time impossible. The work that the doctors or their departments do is the real determining factor. As part-time service is, with few exceptions, limited service, employers who wish their working people to have the benefits of unlimited medical attention must engage physicians capable of rendering or directing such and must give them time and opportunities to do so, leaving the determination of the conditions under which they may work largely to the doctors themselves.

Beyond the fact that industrial medical departments may or should consist of doctors, attendants, and clerks, personnel is also far from being standardized. The probable reason is that industrial medical service itself is not yet standardized, an opinion which is supported by the variance in the activities of the doctors of the different establishments. The treatment of trivial injuries, for instance, is the only one that is common to all. If that were the extent of industrial medical service, standards of personnel could possibly be fixed, with the accident frequency and severity rates as the basis. But there are other activities, and the more of them a medical department undertakes the larger the personnel must be. Even so, other factors enter into the problem. Consider physical examination of new employees for illustration. Here the number of doctors depends upon the thoroughness of their examinations, their ability to systematize and do the work rapidly, and the labor turnover, which varies greatly in different establishments. Personnel depends then, chiefly upon the abilities of the doctors to create demands for the services of their departments and their capacities to organize and direct their departments in the service of these demands.

The final conclusion in this, as also in the attempt to fix time standards, is that employers must engage capable physicians and allow them to secure assistants in such number and variety as they may deem necessary properly to carry on their work. If employers do not feel that they can leave these decisions to their doctors they may be assured that they have engaged the wrong physicians.

THE SELECTION OF INDUSTRIAL PHYSICIANS.

Professional ethics prevent doctors from soliciting patients and likewise deter them from soliciting employment with manufacturing concerns. It is incumbent upon employers, therefore, to seek physicians when they have need for their services. For the most part, when it is decided to start works dispensaries, the employers engage physicians to whom they are in the habit of sending injured men, or they may persuade their physician friends to assume charge.

There are four classes of physicians in the industries:

1. *Those who have drifted in.*—As may be expected, physicians frequently drift with their work as they have drifted into it, but to their credit it should be said that some have found themselves, have arisen to their opportunities, and have made their names in industry. Others, of course, are indifferently successful or have failed, as is usual with those who drift.

2. *Those to whom industrial service is a job.*—These have taken up the work as an expedient and for the money it pays them. Lacking in interest, or having other things in mind, they seldom become more than routine workers, "finger wrappers" as they are called, and when their jobs have served their purposes they drop out.

3. *Those who are qualified and are making industrial medical service their life work.*—These men are giving their brains and their hearts to industry, striving at all times to better conditions among the working people and to benefit industry itself. They are a credit to their profession, an exemplification of its ideals and a very definite asset to the producers.

4. *Those who use the industries as means to establish themselves in surgery or general practice.*—As their objectives approach realization and the demands of their private work become more pressing, they lose interest in their industrial connections and finally drop them. In some instances, having withdrawn from active industrial service, these men retain connections as consultants and as such care for the seriously injured employees.

When choosing physicians employers should exercise the same care they use in selecting men for other important positions in their executive organizations, and under no circumstances should they assume that physicians, because they are physicians, are thereby qualified to direct industrial medical departments. Employers would not, for example, engage abstract lawyers to represent them in matters pertaining to corporation law. They would not hire superintendents unless clearly possessing executive abilities. Nor should they expect obstetricians, general practitioners, or even surgeons to make good in industrial medicine unless they have adaptability, latent capacity for administration, and plenty of time and opportunities to orient themselves.

Employers should consider that two types of mind are needed for industrial medical service—one capable of expressing policies and able to organize the staff and direct the work, the other competent in details and qualified to do the routine. The person who possesses the latter type is ordinarily void of initiative; he acts on precedent or the instruction of others.

Being trained in details, which the practice of medicine essentially is, physicians are apt to be of the latter type. They act on the precedents established in their minds by their instructors in college and the writers in medical books and journals, or upon the advice of others. If the qualities that make a good executive are inherent in them, those qualities are likely to have been stifled; at any rate, medical training and experience do not tend to their development.

To be sure, some physicians are endowed with administrative capacity which refuses to be stifled. By surrounding themselves with skillful assistants and directing their efforts wisely they become successful and usually prominent in their profession. This is the kind of physician that is most able to direct industrial medical departments, and employers would do well to select this type when in need of the services of chief physicians.

Because of the fact that few industrial medical executives are available, being already engaged, employers are compelled to draw them from private practices or other sources, as has been indicated. In doing so they should remember that the doctors are passing from familiar to strange environments and that they may need help in adapting themselves. As a suggestion, it may be well for them to visit several well-known industrial clinics to study existing practices, and certainly, before being expected to take charge, they should have time to familiarize themselves with their own establishments.

To secure competent physicians for places where only one doctor is needed, with possibly one nurse or other aid, is exceedingly difficult, as the duties are such as to require the exercise of initiative as well as attention to the details of routine work, including the keeping of records and the making of reports, matters in which doctors are notoriously neglectful. When obtaining physicians for such positions employers have need for more than ordinary judgment, both in choosing them and in fitting them into their shop organizations. It is best to secure for these positions, if possible, doctors who have acted as assistants in established industrial medical departments and, while there, have shown talent for management. This also applies to the choice of chief physicians for those departments in which the executives are expected to do part of the routine work, the size of the establishments necessitating the employment of several doctors but not justifying the devotion of one man's whole time to administration.

Parenthetically it may be suggested that the development of industrial medicine may be furthered by the affiliation of medical colleges with competent industrial medical departments, in order that graduates who incline to industrial work may secure actual training and experience in that direction as a part of the intern period.

There will be places for routine workers in the medical service of industry, but their opportunities for employment must be limited chiefly to large medical departments and to association with physicians who provide medical service to numbers of small establishments. These fields hold openings to doctors of the classes one and two, previously discussed, whose faculties may be undeveloped or are naturally within narrow limits, giving to the young men chances for development and advancement or quick monetary returns and to the older, occasions for semiretirement.

DETACHED, PART OR WHOLE TIME MEDICAL SERVICE.

In its formative stage industrial medicine was purely an emergency service. Trivial injuries were either ignored or treated by fellow workmen. Others were sent to hospitals or the offices of physicians selected because of their availability, their reputations for competency in the care of emergency cases, or their willingness to enter into advantageous agreements relative to the cost of their services. On occasions of serious injury, or doubt as to where injured employees should be taken for treatment, doctors were summoned to the establishments and requested to assume personal charge. Ambulant patients were treated subsequently at the physicians' offices.

This plan, which is still in vogue in 14 per cent of the establishments studied, has certain disadvantages, relating chiefly to lost time, which are as follows:

1. The untreated or poorly treated trivial injuries are prone to develop infections resulting in prolonged incapacity and more or less permanent deformity.
2. The time elapsing between the occurrence of serious accidents and proper treatment of the injuries is frequently unnecessarily long.
3. The time required for trips to doctors' offices in nonincapacitating injuries is time lost to industry.
4. Employees who must go to the doctors' offices for redressings are inclined to lay off from work so long as dressings are necessary.
5. The physicians are not close enough to the industries to realize the cost of lost time and are therefore inclined to let the injured employees themselves fix their disability periods.
6. The physicians can not be of much assistance in fitting partially incapacitated employees for work which they may be capable of doing.

There came a time when certain employers perceived the disadvantages of the detached emergency service. They became convinced that a fairly large proportion of injured employees could be treated and returned to work with little time lost if means for proper treatment were at hand within their establishments. Works dispensaries were improvised, or built, and equipped. Physicians were placed in charge and some of them, now well known, became interested in health conditions in their relations to the main problem of production. With the improvement of these as their incentive they foresaw opportunities for medical service far beyond the reconstruction of injured workmen, which though humane and splendid does not directly facilitate production.

Being physicians they understood, probably better than employers, the industrial value of the sound human body. They used their talents to assist in the selection of working forces, the assignment of workers to suitable jobs and the prevention of sickness among them, and the benefits to the working people, as well as to those who employed them, were such as to attract favorable attention. Their successes inspired other physicians and lured them into industrial service, aroused emergency surgeons already affiliated with industry to a sense of progress and proved the impetus for the recognition of industrial medicine as a valued branch in the science of industrial management.

Some employers, as indicated by the study, have provided dispensaries and facilities for the treatment of minor injuries and have employed nurses or other attendants, but still rely upon outside physicians for the treatment of the injuries their attendants do not feel qualified to handle. This kind of service may be considered to be a compromise between the detached emergency service and the part or whole time service. Its only advantage, beyond the possibility that it may be economical, is that it permits the treatment of non-incapacitating injuries in the establishments with a reduction in lost time. But the question arises whether or not the attendants are practicing medicine, and, if so, are they considered as assistants to the physicians in the treatment of patients they never see and are consequently not in violation of the medical-practice acts?

The detached medical service is, with rare exceptions, solely a surgical service, and the doctors devote only so much time as may be necessary to take care of the patients that are referred to them. Obviously the employers who desire a broader range of medical activities, such as physical examinations, etc., must attach their physicians to their organizations either on part or whole time bases, depending upon the number and variety of the activities they wish, the thoroughness with which they desire them to be done, and the speed and facility with which the medical organizations are able to do their work. These conditions, of course, come ultimately right down to the doctors who are in charge and depend upon their abilities to create demands for activities and to initiate them, to organize their departments, and direct the work.

The terse motto of the president of the Erie Forge Co. applies here. It is: "Organize, deputize, and supervise." This motto can not be impressed too much upon industrial physicians. For the greater part industrial medical departments simply run themselves. As physicians are not trained in management, employers should make it their business to see that they get this training or assist them in the management of their departments.

The mooted question is whether better results are obtained by physicians who devote all of their time to their industrial connections or by those who devote portions of their time, while retaining their associations with private practice. The essential argument favoring the part-time physician seems to be that he remains in intimate contact with the practice of medicine and is thereby more likely to be a broader-minded medical man. The essential argument against the part-time doctor is that so long as he remains a part-time man he is not wholly an industrial physician. Obviously his attentions must be divided, and if he derives the greater portion of his income from a private practice, he is naturally inclined to devote the greater part of his thoughts and energies to tle furtherance of that.

The arguments for and against the part-time physician are conversely arguments against and for the whole-time man. It is apparent that the whole-time industrial doctor has no extraneous matters bidding for his attention and is consequently able to become a specialist in industrial medicine. He has time to study intensively his problems and to develop himself and his work without diversion. Probably the best argument for the whole-time doctor is that the scope of the work in the medical departments studied is much greater among those having whole-time service than in those having part-time service (see Table 13), and whole-time departments are, therefore, doing more for the employees.

In the establishments visited there are 263 whole and part time doctors. Sixty-five per cent of them are spending all their time in their work and 35 per cent part of their time.

REMUNERATION OF INDUSTRIAL PHYSICIANS.

Attempts were made to gather data on the pay of industrial physicians and the basis for its determination; but, owing to the reluctance of some doctors to reveal the information and the fact that official sources were not always available, the data are somewhat fragmentary. There is enough, however, to give a fair idea of the situation. Only the high lights will be sketched.

Establishments of all sizes having detached service.—Practically all physicians who render service only when requested receive their compensation in fees payable on the presentation of bills for cases treated or according to private agreements effected between themselves and the companies or the underwriters.

Establishments with 500 employees or less.—In one instance, among these, the physician receives fees for the attentions which the nurse renders in addition to those which he gives; he puts in about one-half hour daily at the plant. In one establishment a part-time physician is paid $1,800 per annum; in another a whole-time doctor is given $1,500, rather incongruous in the comparison.

Establishments with 500 to 1,000 employees.—One of these which has a dispensary with an attendant, but calls its doctor when he is needed, gives him a retaining fee of $50 per month, in addition to which the doctor receives fees from the underwriter for the actual work he does. One physician who spends one-half hour daily receives $900 a year. Another who puts in as much time as necessary is paid $1,200 a year. An unusual arrangement for a part-time physician is $2 per hour and physical examinations $2 each, additional to the hourly pay. Nine cents per employee per month is the basis of pay for a part-time doctor in a plant having 900 employees.

One company maintains a dispensary with a whole-time medical service secured through two part-time doctors who are paid 50 cents for each medical case they attend and receive fees from the underwriter for the injuries they treat. One whole-time doctor in another place is paid $20 a week and receives also fees from the underwriter. In another place a whole-time doctor gets $1,200 a year. One company pays its chief physician, who serves a part of the time, $2,000, and the assistants, who serve all of the time, $1,200.

Establishments with 1,000 to 2,000 employees.—One doctor is paid $3,300 for three hours daily. Salaries in other places for part-time service vary from $1,200 to $2,500 per annum. One company pays a whole-time doctor $1,200 and two part-time doctors, one the chief, $2,700 and the other $1,200. One part-time physician gets $40 per month and fees for services rendered to all compensable cases. For three afternoons a week one man receives $60 per month. For one hour daily another doctor obtains $100 per month and fees for compensable cases. For one hour daily one doctor receives 13 cents per employee per month, there being about 1,200 employees. The salaries of the full-time doctors vary from $1,200 to $3,000 per year.

Establishments having 2,000 to 10,000 employees.—One part-time physician gets $2,200 a year. Two, also part-time, receive fees from the underwriters for services rendered. One of these receives about $15,000 a year, out of which he is expected to pay the nurses and other help. He nets about $8,000. The salaries of the whole-time doctors vary from $3,000 to $5,100 a year.

Establishments having more than 10,000 employees.—One part-time physician obtains fees for services rendered. For two mornings weekly another is paid $4,200 a year. For three hours daily one obtains $3,600 a year; another in the same establishment, $1,850. The salaries for whole-time men range from $1,200 to $7,500 a year, depending upon their responsibilities and duties.

The conclusions from the preceding data, fragmentary though they may be, are: (*a*) That the remuneration of industrial physicians is very evidently a matter of individual bargaining; (*b*) that physicians who render service only on request are better paid proportionately than part-time doctors; and (*c*) that part-time doctors are better paid in proportion to the time they give than whole-time doctors.

It may be inferred, in explanation of the last two points, that physicians who devote regular hours to industry are willing to accept relatively smaller stipends because of the regularity of the hours of work and pay. From the standpoint of the employers there is another reason, although it refers principally to those whole-time physicians who act as assistants or handle only routine work, as, for example, the dressing of trivial injuries. This work is done in many places by trained nurses or other help who have been taught to do it, and very naturally the standard of pay is apt to be based on that of the cheapest help which is capable of doing the work satisfactorily. Employers argue that they are not justified in paying a doctor more than they would a nurse, or other attendant, so long as he does only such work as a dispensary attendant is able to do.

Unfortunately there are grounds for this contention. To use a commercial expression, many industrial physicians do not sell their services to their best advantages. They sell their time, but in the transaction they dispose of only a limited part of the abilities their training has developed. Reference is made, of course, to those doctors who are content in treating trivial injuries and perhaps a few minor ailments, but go no further; they are merely mechanicians. To employers the evident necessity for medical service is to care for the injuries that occur in spite of safety precautions, and, as a class, they do not perceive that physicians have abilities of industrial value far beyond that. It is good business, using another commercial expression, for doctors to bring employers to this realization, and they can do so by creating demands for as many varieties of their service as they may be capable of performing. It is just as true of physicians as of others that the use of the brain pays better than the use of the hands.

DISPENSARY ATTENDANTS.

Attendants, as found in the dispensaries of the establishments included in the study, fall readily into two classes according to their training—(*a*) the trained nurses, male and female, and (*b*) those men and women who have learned through experience the work they have to do. The trained female nurses are 65 per cent of the whole number and the others are trained male nurses 4 per cent, experienced women 3 per cent and experienced men 27 per cent.

The preponderance of nurses over the experienced help may be construed to indicate that a course of training as a nurse produces the better qualified attendant. The marked preponderance of the female nurses over the male nurses may indicate that female nurses are relatively more available, or it may indicate that, given equal opportunities for training, women make better attendants than men. Although female nurses are undoubtedly greater in number and consequently are more easily obtained, there is no question as to the superiority of women over men as nurses, a fact that at once accounts for the comparatively small number of available male nurses. The qualities inherent in women because of their sex probably makes them just as desirable as assistants in the treatment of industrial patients as of sick people in general and therefore of greater demand as dispensary assistants.

Possibly the excess of experienced male attendants over the female may be suggested as a refutation of this reasoning, but a study of the experienced attendants makes such a rebuttal untenable. With the exceptions of those in a few establishments where first-aid men, so-called, are deliberately cultivated, experienced dispensary attendants have found their places by chance. Clerks and other employees whose duties have thrown them into contact with accident cases have gradually developed, through observation, experience and perhaps some study, into dispensary attendants. Two illustrations will suffice. A man who was once doing janitor service in a dispensary is now doing dressings in the same place. Also there is the young man whose duty it was to make out accident reports for the underwriter, later was assigned as a clerk in the dispensary and subsequently became a very clever attendant. As circumstances are more likely to bring men than women into contact with accident cases, in clerical capacities or otherwise, the proportion of experienced male attendants is of course greater than female.

Dispensary attendants dress injuries and in some instances give medicines for headaches, constipation, etc., assist the physicians in special cases and examinations, attend patients in wards and rest rooms, prepare dressing materials, keep records and make out reports when clerks are not provided, and occasionally do janitor service. In some places they give instructional talks to the employees in person or collectively, make calls on absentees, render brief nursing attentions to the sick and injured who are confined in the homes and do social work among the employees.

Several of these functions require comment; the others are self-evident and need no special consideration. The dressing of ordinary injuries and the application of subsequent dressings in particular have been somewhat standardized in each dispensary and are capable of being done more or less mechanically. The same is true of the administration of the medicines with which the average dispensary is stocked. It is quite proper that nurses and other attendants should proceed with these routine treatments under the supervision of physicians, but as already suggested, there is some doubt as to the advisability, and possibly the legality, of their doing so in the absence of physicians and uninstructed by them.

A surprising number of medical departments visited purchase their dressing materials and solutions already prepared for use, an expensive form in which to obtain them. To illustrate, one physician was getting his Dakin's solution from a druggist at a cost of $2 per gallon, while the doctor in a nearby establishment was having the company chemist prepare the Dakin solution at a cost of 14 cents per gallon. While the preparation of such solutions by dispensary attendants is not usual, it is given notice in order to emphasize their possible use in the economical preparation of other solutions and the materials generally necessary to dispensary work. More especially does this apply to the gauze used in doing dressings. There are many odd moments when attendants can use their time to this advantage, as in the case with the nurse who prepares dressing materials when she is not employed with her regular duties of calling on sick and injured absentees.

The keeping of records and the making of reports, both of which are very necessary in connection with accident cases, appear generally to be distasteful to physicians, and when they are compelled to do their own clerical work, doctors do it but indifferently well. On the other hand, dispensary attendants frequently do very nicely in their dual capacities of assistant and clerk. A Philadelphia nurse has developed a good system for bringing out a daily summary of the medical work.

Because of their education, nurses are fitted to give instructional talks on health to employees. It was noted, however, that no male nurses give such talks. By speaking to small gatherings of girls in their establishments, of talking to them individually, the female nurses are in a position to communicate valuable information to them, regarding more particularly those matters which relate to their sex. The newly employed girls of the Globe-Wernicke Co. are requested to visit the nurse in the dispensary for this purpose. Similar and yet undeveloped is the opportunity which the dressing of cases offers attendants for the conveyance of health knowledge to employees at a time when their mood is receptive, their attention having been directed to the care of their bodies by the conditions that have caused them to visit the dispensary.

In an effort to reduce absenteeism some employers have investigators visit those of their employees who fail to appear for work. Nurses have been used to make these investigations, very likely because of the belief that sickness is the most frequent cause of absence and possibly because of the impression that their profession gains for them a welcome that offsets somewhat the resentment that personal inquiries are prone to arouse. It is desirable that employers should ascertain the causes of absenteeism and it is proper that they should endeavor to reduce it, but, as has been learned, to use nurses as investigators is apt to jeopardize their usefulness as nurses and reflect in the attitude of the employees toward medical departments. On the other hand, nurses may visit sick or injured employees, known to be absent for either of those reasons, and render them a beneficial service by assisting for brief periods in their treatment. This is being done by the nurses of some establishments. Armour & Co., by special arrangement, have nurses of the district association attached to their dispensary staff. Another company, in a small city, supports a district nurse who attends the company's sick employees in addition to her regular work.

Efforts of nurses in the behalf of the social welfare of employees should be confined, at any rate in the early attempts at social service, to those instances in which medical departments are asked to assist or advise or for very good reason are moved to offer their aid, lest unrequested and ill-advised proffers arouse feelings of resentment. The betterment of social conditions among certain types of working people are unquestionably necessary, and as social conditions have effects upon producing and earning capacities, employers have just cause for seeking their betterment. Unless sociological departments are provided, doctors and nurses usually assume this duty; it falls upon them very naturally; but those who seek to carry it on must of necessity be tactful and otherwise fitted for it.

Although janitor service is undoubtedly recognized as being necessary, the unkept appearance of many dispensaries suggests the belief that it is more frequently done perfunctorily than carefully, probably because the care of dispensaries is usually in the hands of factory janitors. The fact is that dispensaries are not cleaned sufficiently often; once a day is not enough to keep a busy dispensary neat. One of the dispensaries of the Carnegie Steel Co., at Youngstown, Ohio, proved to be a model in this respect. At the end of the dressing hour, during which about 25 men were dressed, it was just as tidy as at the beginning, a result that was due entirely to the negro janitor who picked up everything that fell to the floor and was constantly mopping up foot prints. The janitor in the dispensary of the Midvale Steel & Ordnance Co., Eddystone, Pa., not only keeps that very busy place clean and in order, but he also assists in dressings by cutting bandages, obtaining supplies for attendants, etc. It is suggested that dispensaries be furnished with janitor service that is sufficient to keep them constantly the cleanest and neatest spots in their plants.

Attendants are very useful elements in medical department organizations. They relieve the physicians of the many details that are necessary, though relatively unimportant, and enable them to devote their time to the better advantage of the employees and to serve more employees than they otherwise could. As a matter of fact, one physician, surrounded by apt assistants whose work is well systematized, is able to serve a large number of employees, as was found to be the case in one establishment where 10,000 workmen are employed. This is a matter for serious consideration when industrial physicians are scarce and difficult to obtain.

THE SPECIAL PRACTITIONERS IN INDUSTRIAL SERVICE.

Industrial physicians are often spoken of as specialists in the practice of medicine and their work as a specialty. If it is true that industrial medicine has a claim to specialism, it is in its application of all of the branches of practice to the needs of industry and industrial workers rather than in pursuit of any one branch.

Industrial medicine began as emergency surgery and was limited to that for a number of years, then suddenly commenced to broaden its scope to include other branches of medical work until it now embraces many of them, such as preventive medicine, physical diagnosis, orthopedics, roentgenology, dentistry, and others.

Obviously industrial physicians are no more able than other physicians to practice competently all of the specialties of medicine, so they are coming more and more to supplement their own work with that of the special practitioners. Ordinarily they refer their patients who require unusual treatments to the specialists, but in some establishments where the demands warrant it specialists have been attached to the dispensary staffs.

The medical organization of one concern, for example, has a nose, ear, and throat man, an oculist, and a dentist; also a chiropodist; all are employed on a part-time basis. A large automobile company has a surgeon, an oculist, a roentgenologist, and a bacteriologist; also a pharmacist and a masseur. One firm manufacturing cash registers uses hydrotherapy, heliotherapy, and massage to a considerable extent, and has an attendant skilled in these practices. The medical department of a large shipbuilding company, where foreign bodies on the eye are common, engages an oculist for two hours each afternoon. The dispensary staff of a large steel company in Philadelphia includes an oculist who puts in three afternoons weekly, while one of the regular staff physicians is skilled in roentgenology.

Dentistry, which is considered as a medical specialty in this discussion, is relatively new to the industries, although popular and bidding energetically for general recognition. Thirteen of the 155 medical departments previously analyzed for personnel have dental service. In six of them the services are whole time, and 10 dentists are employed, with an average of approximately 14,800 employees per dentist. Seven of them have part-time service, varying from sufficient to meet definite appointments to one-half of a day, with one dental attendant (one being a dental hygienist) to each establishment and an average of approximately 4,500 employees to each, the smallest being 700.

The volume of work which three dentists accomplished in 1917 for a large rubber company employing about 15,000 employees is astonishing. They examined the teeth of 20,562 applicants for employment and attended 6,073 patients. As evidence of the value and popularity of their work they report for that year an increase of 9,623 in the number of people examined and treated over the number for 1916, an increase of 3,306 in the number of treatments, 1,060 in first-aid cases, 203 in prophylactic work, and a decrease of 507 in the number of people not having toothbrushes.

The opinion was expressed by the chief of a large industrial dental clinic that one dental unit operated from 9 a. m. to 4.30 p. m. daily is necessary for each 500 to 600 employees. In this clinic from 45 minutes to one hour is necessary for each patient, rendering prophylactic or emergency service only, and the cost per unit is $3 per hour.

INDUSTRIAL DISPENSARIES.

The quarters for housing industrial medical departments are variously named dispensary, hospital, clinic, and doctor's office. Although etymologically the word dispensary means a place in which medicines are dispensed or administered, it has come by common acceptance, when applied industrially, to indicate the room or rooms in which employees receive dressings or treatments, and the majority of establishments so designate their doctors' quarters, whether they consist of one room or several. Large establishments which have separate buildings for medical service incline to the use of the word hospital or the name emergency hospital, although bed-ridden patients are not kept in them more than temporarily. The selection of a name is chiefly a matter of local interest, and any name that is known to the employees is satisfactory. For the purpose of this study the word dispensary is used whether the quarters are a single room or several, integral with buildings devoted to other uses or separate.

Modern industrial dispensaries are amplifications of the first-aid cabinet, from which they evidently have been developed. Despite the fact that the process of evolution has added other functions, until now industrial dispensaries are frequently quite elaborate, possessing features that are peculiar to hospitals and physicians' offices, as well as first-aid stations, they still retain the treatment of injuries as their dominent function, and rooms equipped for that purpose remain the centers of interest.

Dressing rooms.—The rooms of 137 dispensaries have been classified according to their use (18 establishments have no dispensaries, and the remaining 15 medical departments are executive organizations only), and 131 of them have single dressing rooms (see Table 12), 5 have two dressing rooms each, and 1 has none, but has an operating room that is used solely for dressing purposes. Dressing rooms are, then, common to all dispensaries, and, it may be added, they are the only rooms that are common to all.

TABLE 12.—*Rooms of dispensaries of establishments classified according to their approximate numbers of employees.*

Purpose of rooms.	500 and less.	500 to 1,000.	1,000 to 1,500.	1,500 to 2,000.	2,000 to 4,000.	4,000 to 10,000.	10,000 and more.	Totals.
Dispensaries, number of	12	21	17	19	24	23	21	137
Separate buildings	3	3	3	4	3	9	8	33
Waiting room	4	6	10	10	12	19	15	76
Two waiting rooms			1		2	1	1	5
Dressing room	12	21	17	18	24	23	16	131
Two dressing rooms							5	5
Physician's office	1	6	5	8	11	18	16	65
Two physician's offices							2	2
Operating room			1	1	7	4	11	24
Ward	1	3	2	6	8	9	9	38
Two wards	1	1	2	1	2	3	9	19
X-Ray			1	1	3	6	11	22
Laboratory	1		1	1	3	4	10	20
Physical examination			2	4	7	13	12	38
Storage supplies		1	2	2	3	7	9	24
Dental office		2	2	5		1	3	13
Two dental offices						1	2	3
Sterilizing				1	3	6	5	15
Clerk's office			1			7	9	17

NOTE.—There are a number of other kinds of rooms to be found, but as they are of infrequent occurrence they do not appear in this table, although they are discussed in the text.

Because of the fact that in many places dispensaries have very evidently been afterthoughts, as indicated by the use of odd spaces, which are always limited in industry, dressing rooms are of sundry sizes and shapes. In one establishment a corner of the storeroom was confiscated and a room, 10 by 12 feet, constructed, now serving the needs of about 600 people fairly well, although there are times when the doctor and his aid have scarcely enough room for satisfactory work. In another establishment the unused angle in the wall of an irregularly shaped building has been used; in yet another, the space under a stairway, making a room 6 feet at one end and 8 feet at the other by 10 feet long. In two places dressing rooms have been improvised by setting off space with screens.

It is apparent that standards of construction must frequently be sacrificed to meet the necessities of existing conditions. It suffices to say that dressing rooms should be large enough to accommodate the attendants and equipment necessary to treat the peak load of patients satisfactorily. If any suggestion can consistently be offered, it is that they should be at least 12 by 12 feet in their dimensions. This is ample for housing the essential furniture and equipment and to enable a physician and one assistant to work comfortably, but not upon more than two patients at one time. Such dressing rooms, if the work is distributed evenly as to time, permit the treatment of approximately 100 patients daily, without rushing.

During rush hours, and they usually occur in part-time medical service, a greater volume of work can be done, such as 25 dressings per hour, or the equivalent of 400 dressings in an eight-hour day. But such efforts have decided disadvantages; the attendants must work at speed, patients are crowded into the rooms or are rushed in and out and the personal element in each case is quite apt to be neglected. To do its work properly, a part-time medical service should have a relatively larger dressing room with more facilities and a larger personnel during the dressing period than if it were a whole-time service and the patients' visits were distributed over the whole day.

Large dressing rooms are for the most part rectangular in shape, and few of them are larger than 17 by 30 feet. Such rooms are suited to handle large numbers of patients, say a maximum of 400 daily. It is only the very large establishments that have such numbers. When they do, it is found advantageous to install dressing stations in suitable places about the plants to relieve the central dressing rooms of trivial cases and to reduce the time required of employees in going for dressings. Confusion may be avoided in large dressing rooms by having separate doors for passage in and out.

The tendency is to finish dressing rooms in white, and this is as it should be, for white gives them a tone no color can, conducing to a better kept appearance and preeminently suitable for semi-surgical work. The beautiful white dressing room of the Perry Iron Co., Erie, Pa. (fig. 9), operators of a blast furnace, stands out in its surroundings like a brilliant star in a black sky. It is justly a thing of pride to everybody from the superintendent to the laborers in the yard. Walls of wood, iron, or brick, painted white, it may be added, do not give the effect that the pure white of enamel on plaster does, and better still is the effect of white glass, as was seen in a few dispensaries. Certainly the room should be floored with a light-colored tile which may be softened by white rubber mats placed as desired. The appearance of some very nicely finished dressing rooms was utterly ruined by cement floors grown dark and rough from use.

Waiting rooms.—Waiting rooms are not universal; but 59 per cent of the dispensaries have them, and of those establishments employing 1,000 men and less not quite one-third have them. Halls are used in some places by waiting patients. As the time of employees is more valuably applied in doing their work than in visiting the dispensaries, doctors endeavor to treat nonincapacitated workmen with little or no delay. It may be said that skill in timing the visits of employees so that they lose minimums of time from their work is a mark of efficiency.

Five dispensaries have two waiting rooms each. In four of these the extra room is used by women, and in the other is used by incapacitated employees who are able to visit or be conveyed to the dispensary for treatment.

Waiting rooms are small, frequently being little more than vestibules. The average is probably about 10 by 12 feet in its dimensions. When a large one is found, as occasionally happens, it is used mostly as a lounging place for applicants for employment waiting to be examined.

Doctors' offices.—Forty-nine per cent of the dispensaries have offices for the doctors. Two of the largest dispensaries have two each and a few have rooms for specialists. For the most part they are only offices which secure to the doctors places of privacy for odd moments and thought, though sometimes they are equipped for consultation purposes. It is not unusual to find clerks in the doctors' offices, there being no other places for them. The size varies from 7 by 7 feet to 12 by 16 feet. The walls may be tinted to affect a pleasing contrast with dressing rooms and the floor may be of hardwood.

Physical examination rooms.—Notwithstanding the fact that 60 per cent of the establishments require physical examinations of applicants for employment, only 28 per cent of them have special rooms fitted for examinations.

These rooms are peculiarly an industrial conception. Their essential feature is the booths in which the applicants for examination remove their clothes. These resemble in a number of dispensaries the small compartments common to public toilets, except that there are doors at both ends; in others they are small spaces set apart by partitions of wood that extend from the floor to a height sufficient to conceal the occupant; and in a very few places they are small rooms.

These compartments may open directly into the examination rooms, in which case there may be two or as many as four to a room, or they may open into a passageway communicating with two or more examination rooms. The former plan seems to be in greater favor. The compartments are so placed that applicants may enter from a hall or waiting room, disrobe and pass on to the examination room and, the examination completed, reverse the procedure.

Examination rooms need not be more than 8 by 10 feet in their floor dimensions; distance tests of vision may be made in rooms of this size by using a mirror. The disrobing compartments may be 40 by 60 inches or smaller. If cement or tile floors are used, they should be covered in lines of travel by mats of rubber or other material, otherwise the bare feet will meet with uncomfortable cold floors.

The number of examination rooms depends upon the labor turnover and the speed with which applicants must be examined. It is purely an arithmetical problem. The time required for an examination averages probably 10 minutes, although this was found to vary from 4 to 15 minutes, depending upon speed and thoroughness.

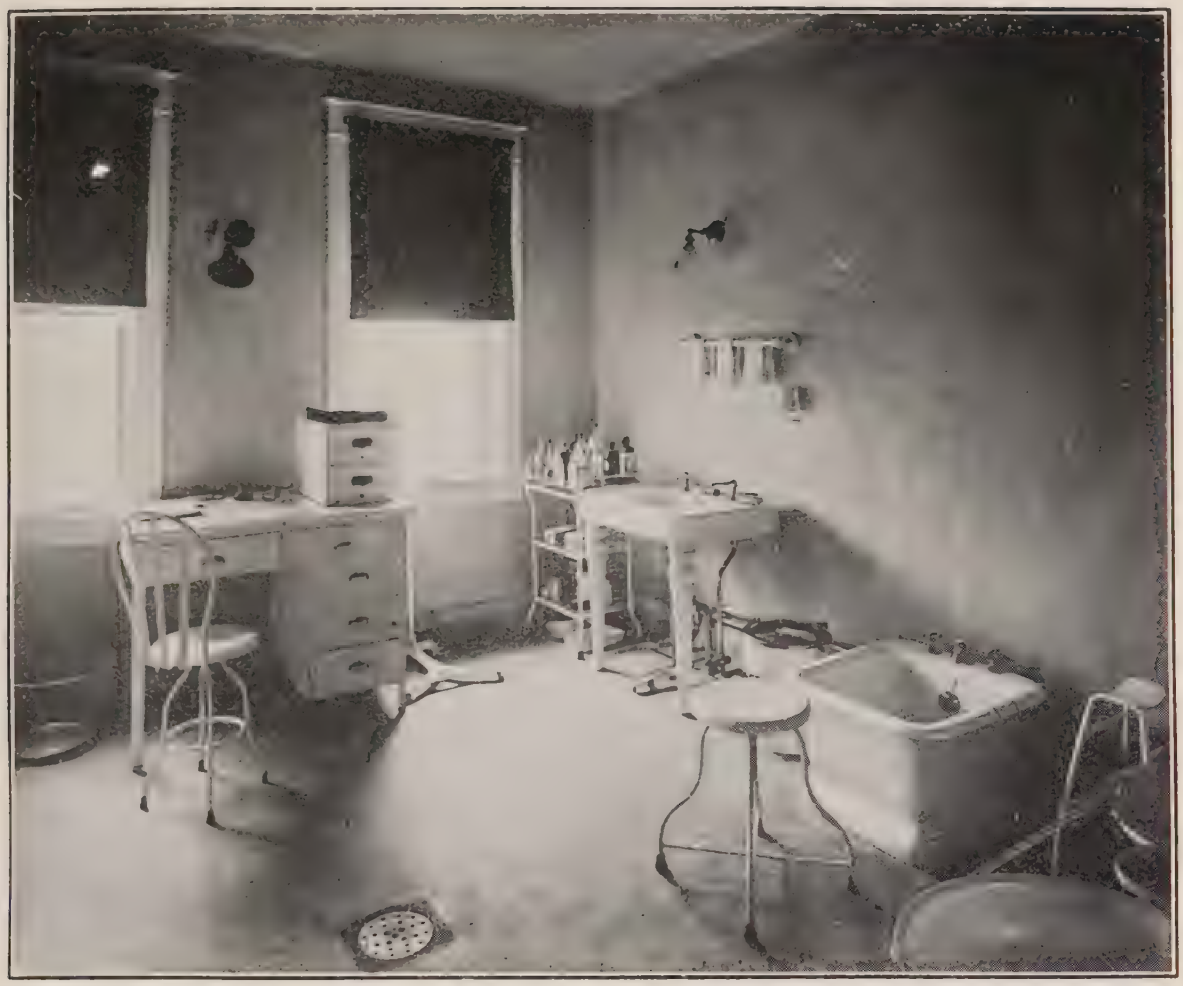

Fig. 9.—Dressing room of The Perry Iron Co., Erie, Pa., a very complete dispensary for a small establishment.

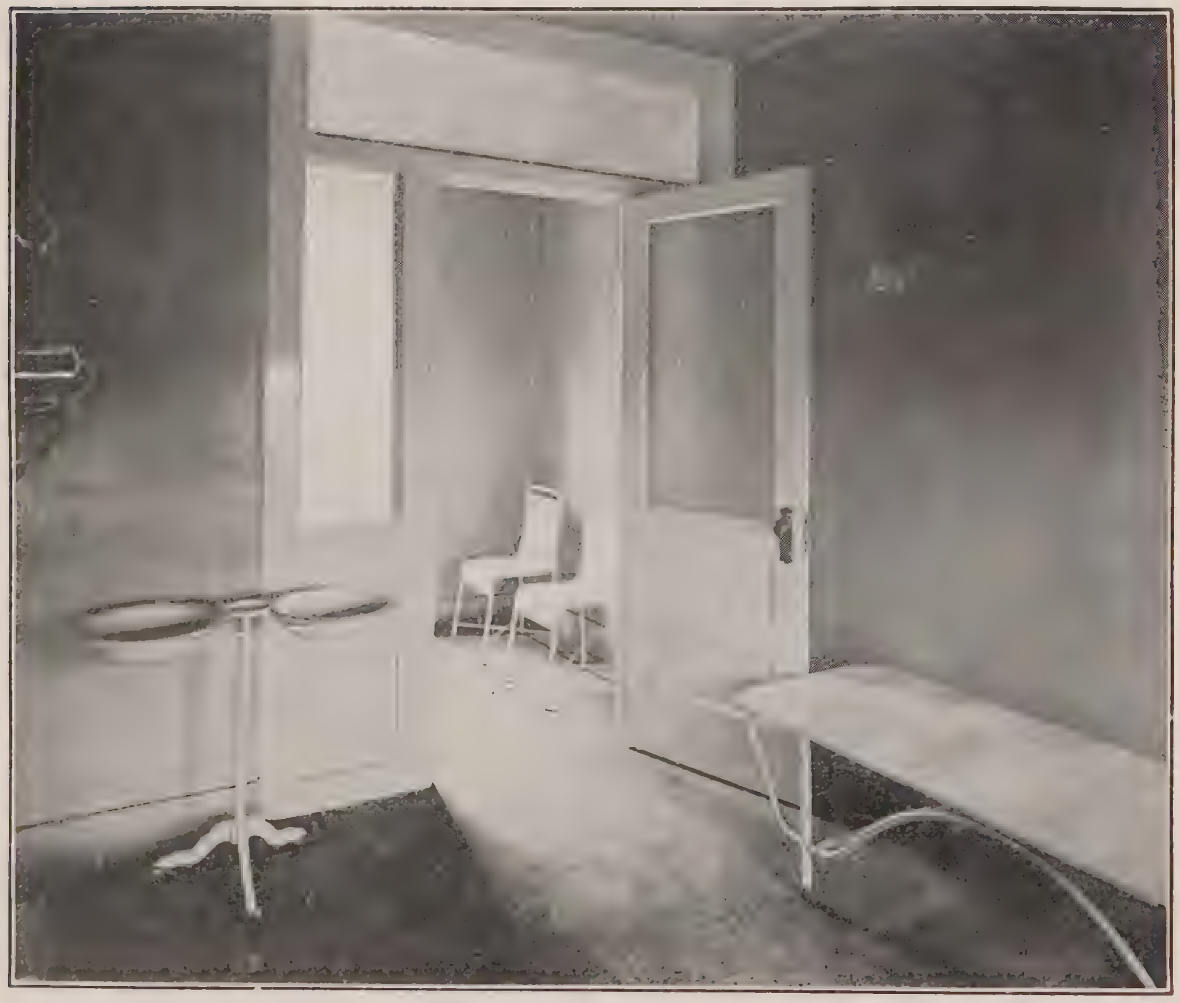

Fig. 10.—Entrance to dressing room of The Perry Iron Co., which serves nicely as a waiting room.

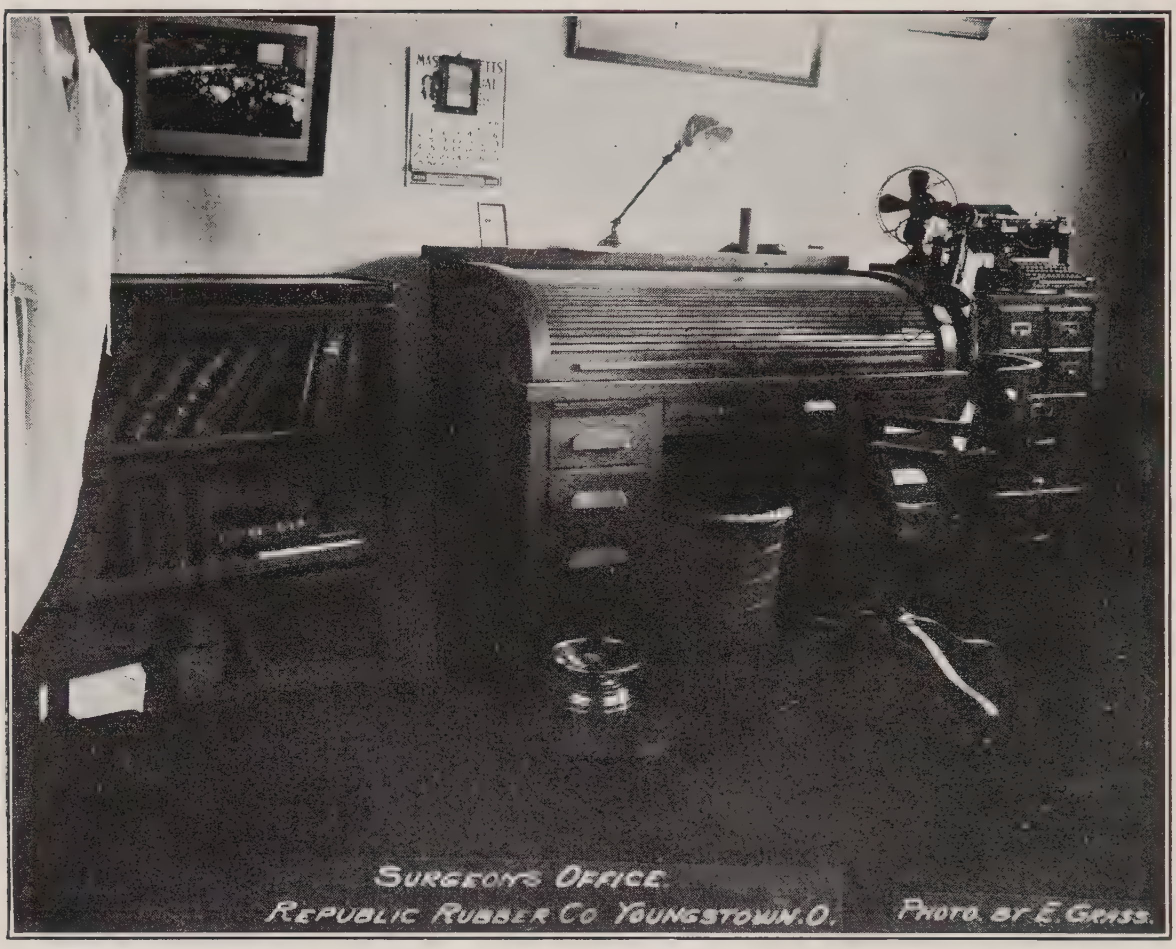

Fig. 11.—A view in the doctor's office, The Republic Rubber Co., Youngstown, Ohio, a comfortable place to think out the problems of industrial medicine.

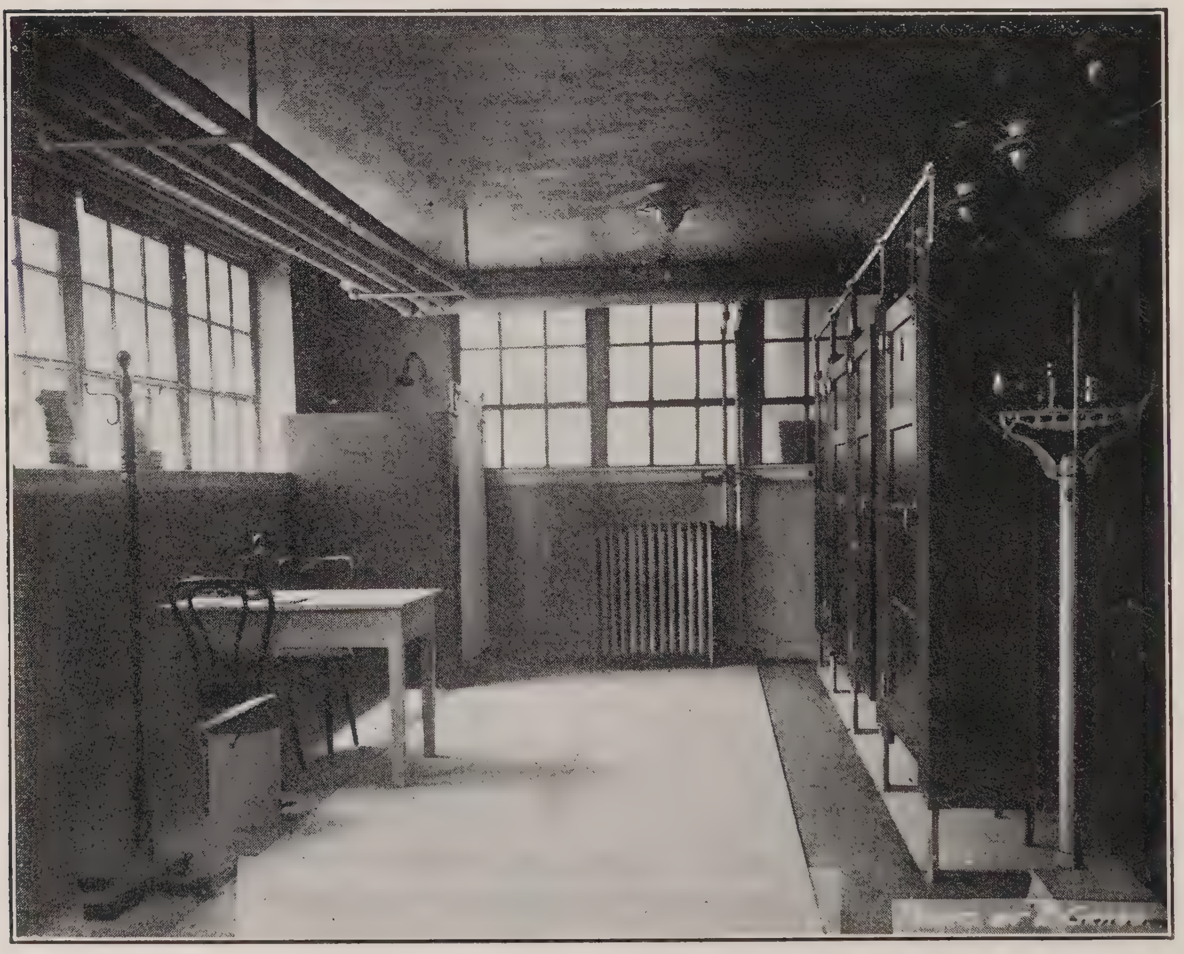

Fig. 12.—Physical examination room of The Republic Rubber Co. Note the compartments for disrobing on the right.

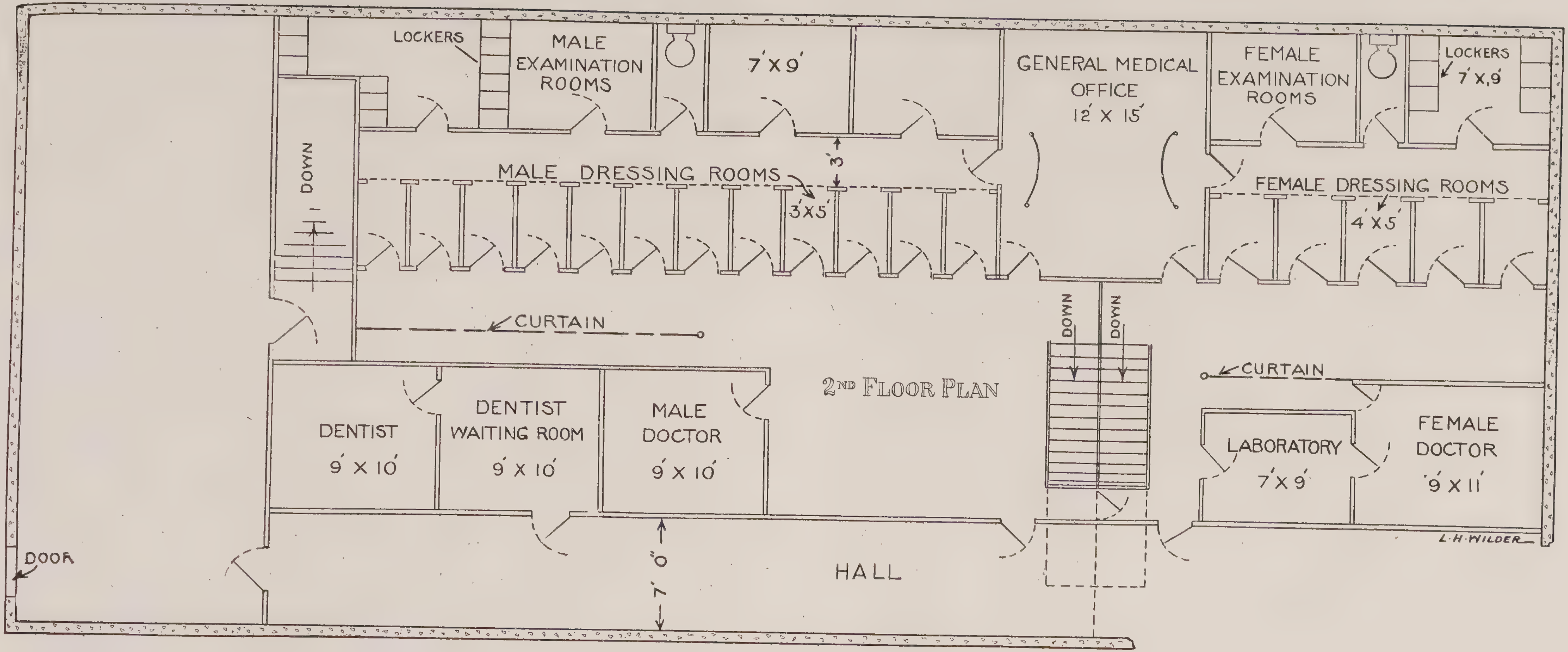

Fig. 13.—Layout of quarters for making physical examinations of applicants for employment in a large establishment.

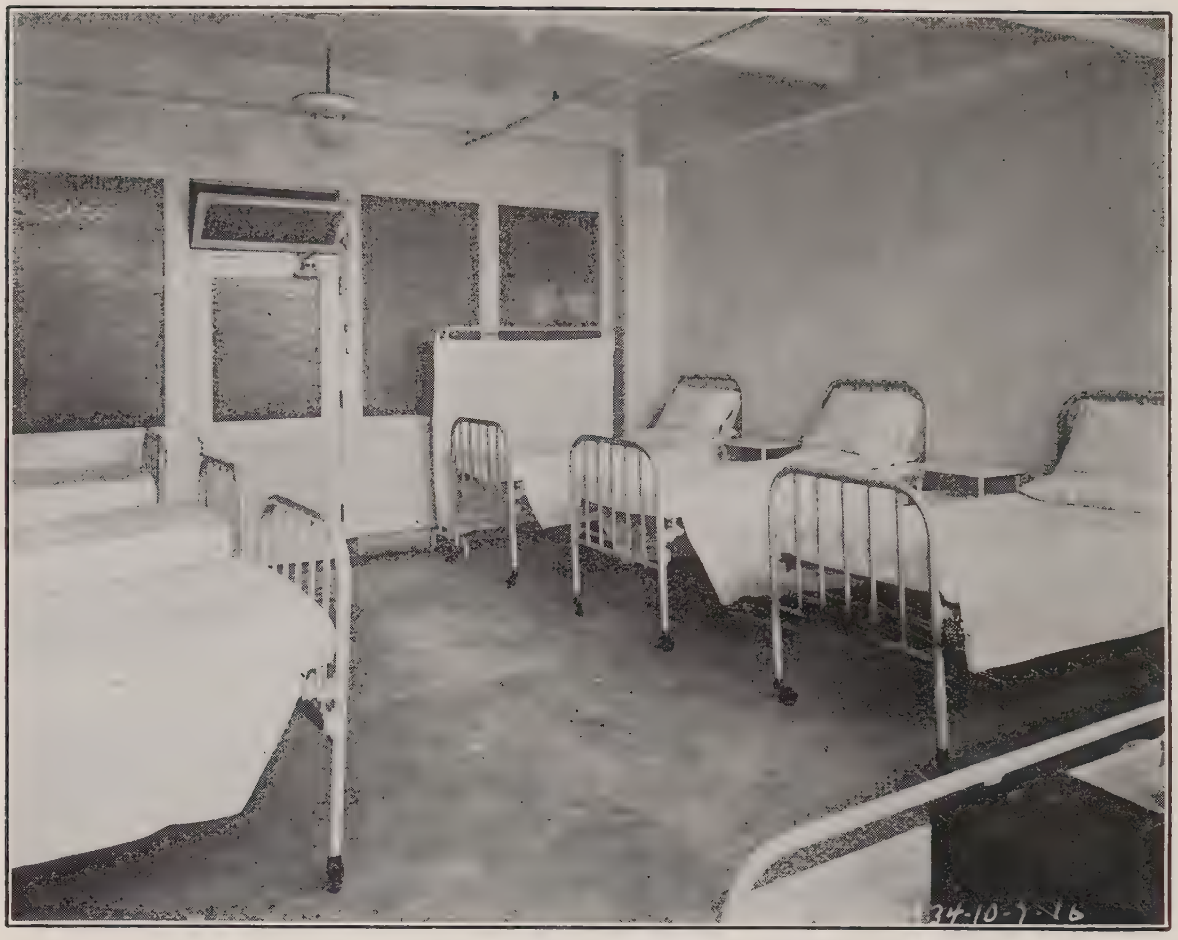

Fig. 14.—Ward in the dispensary of The Ford Motor Co., Detroit.

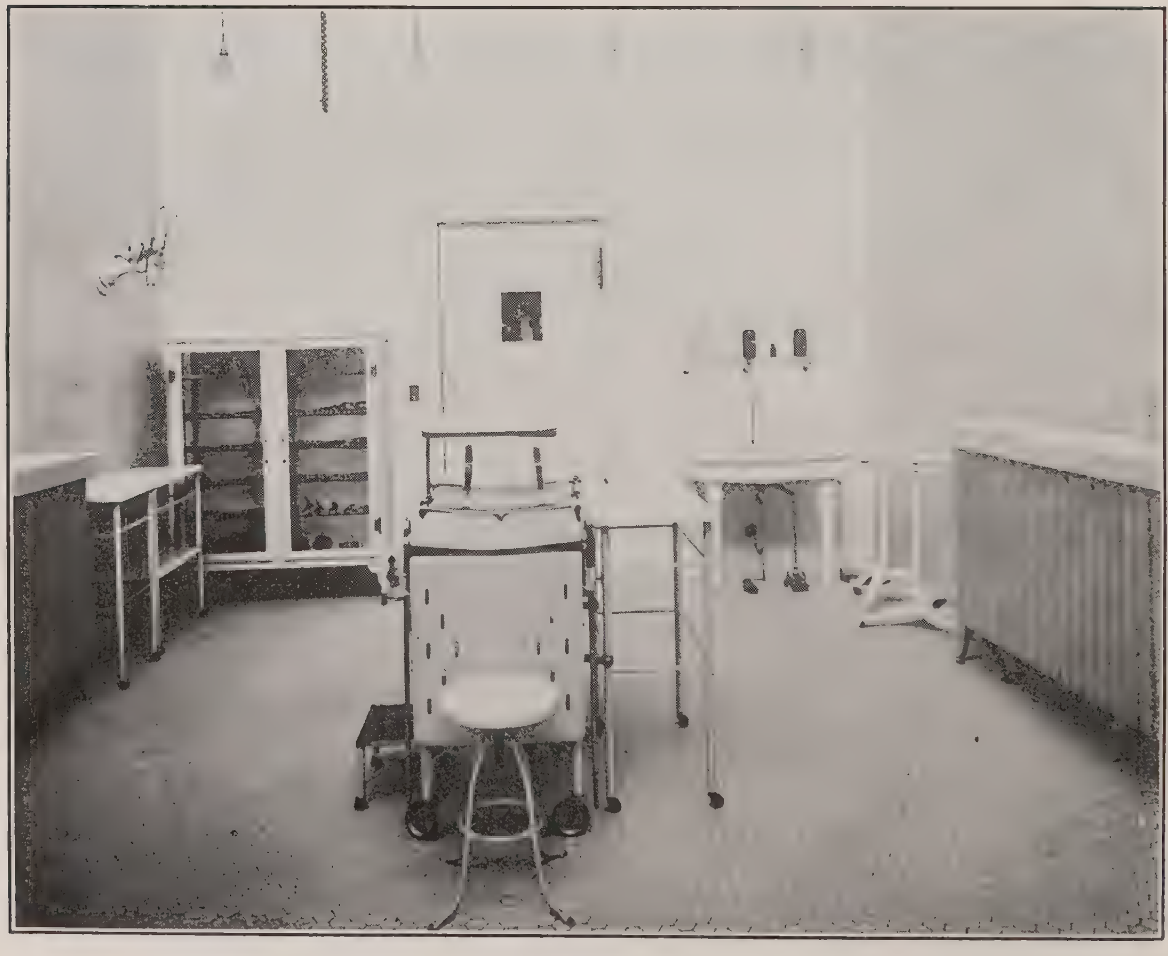

Fig. 15.—Operating rooms of modern industrial dispensaries are just as beautifully finished and outfitted as in the best hospitals.

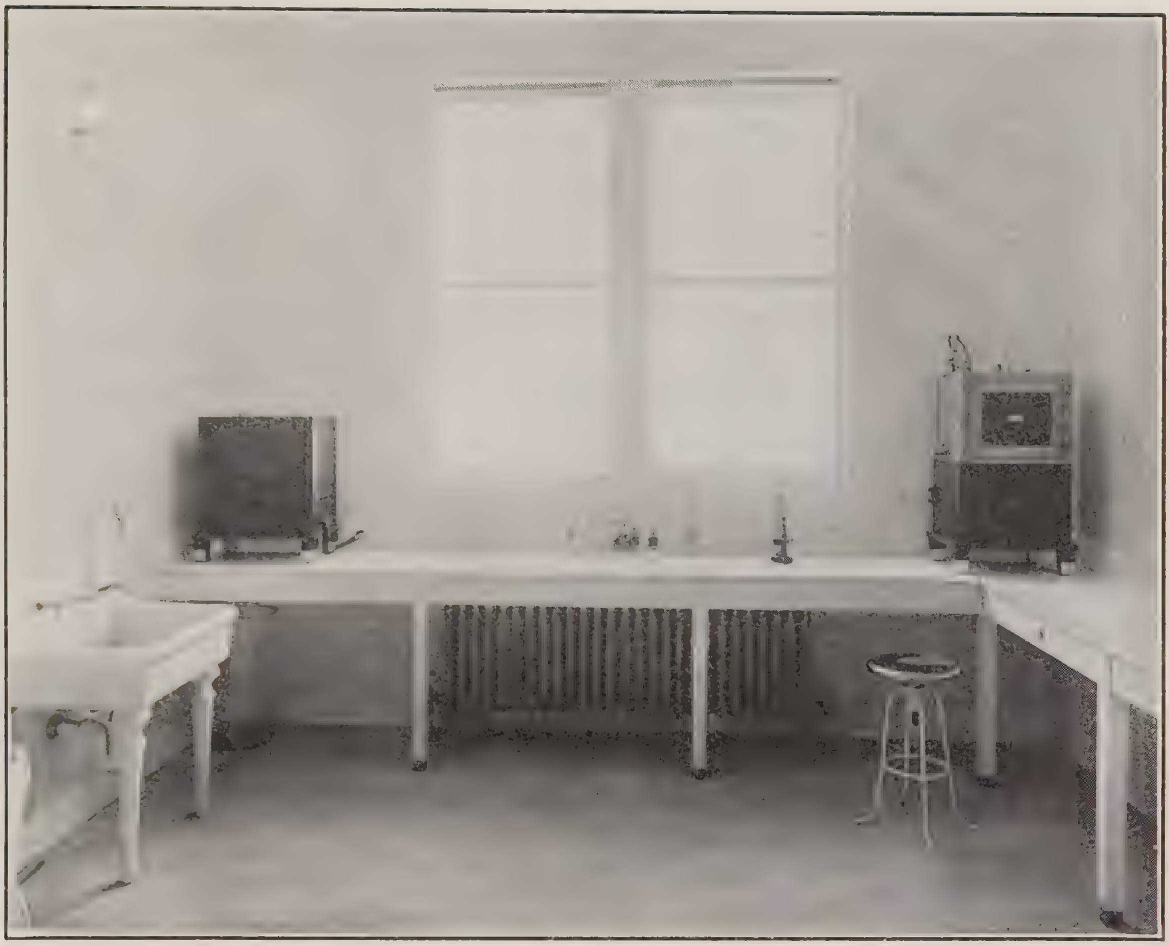

Fig. 16.—The bacteriological laboratory in the dispensary of The Western Electric Co., Chicago.

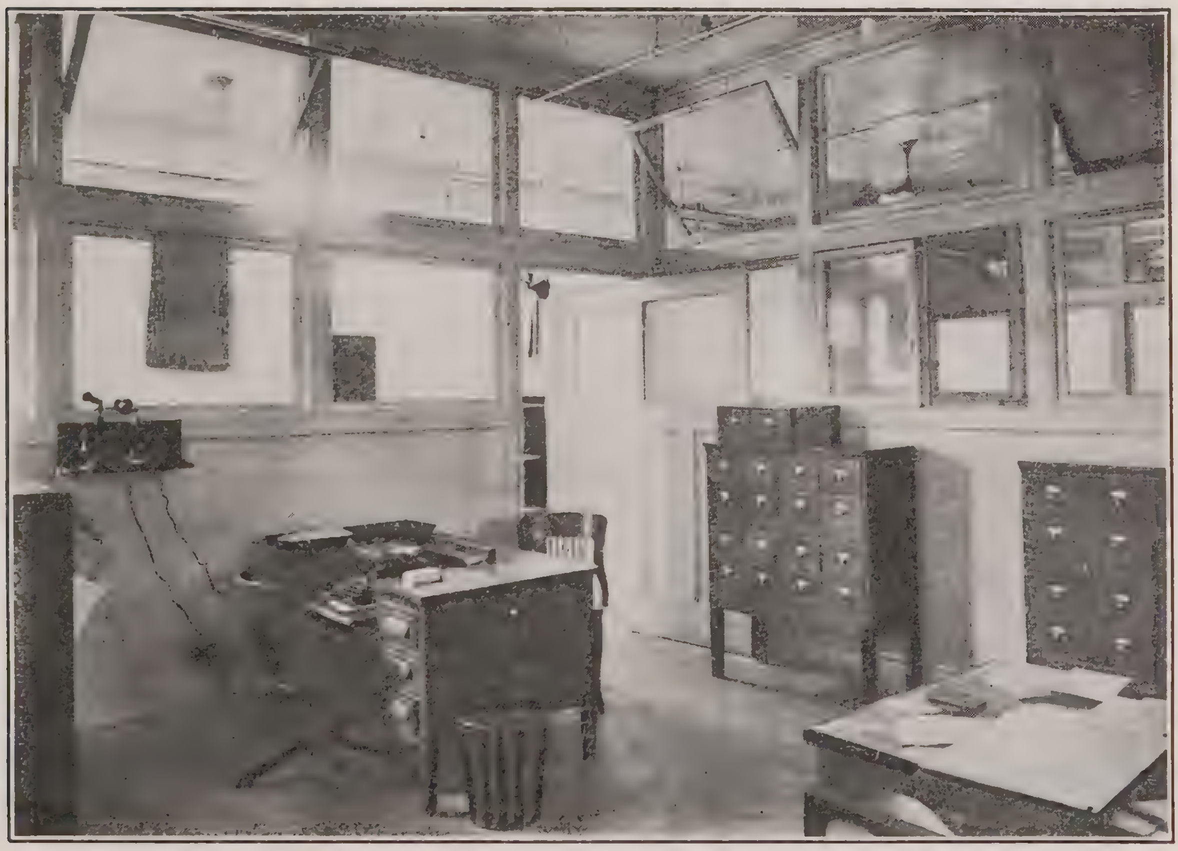

Fig. 17.—General office of the medical department of the Lynn Works, General Electric Co. This is a good example of a clerical office.

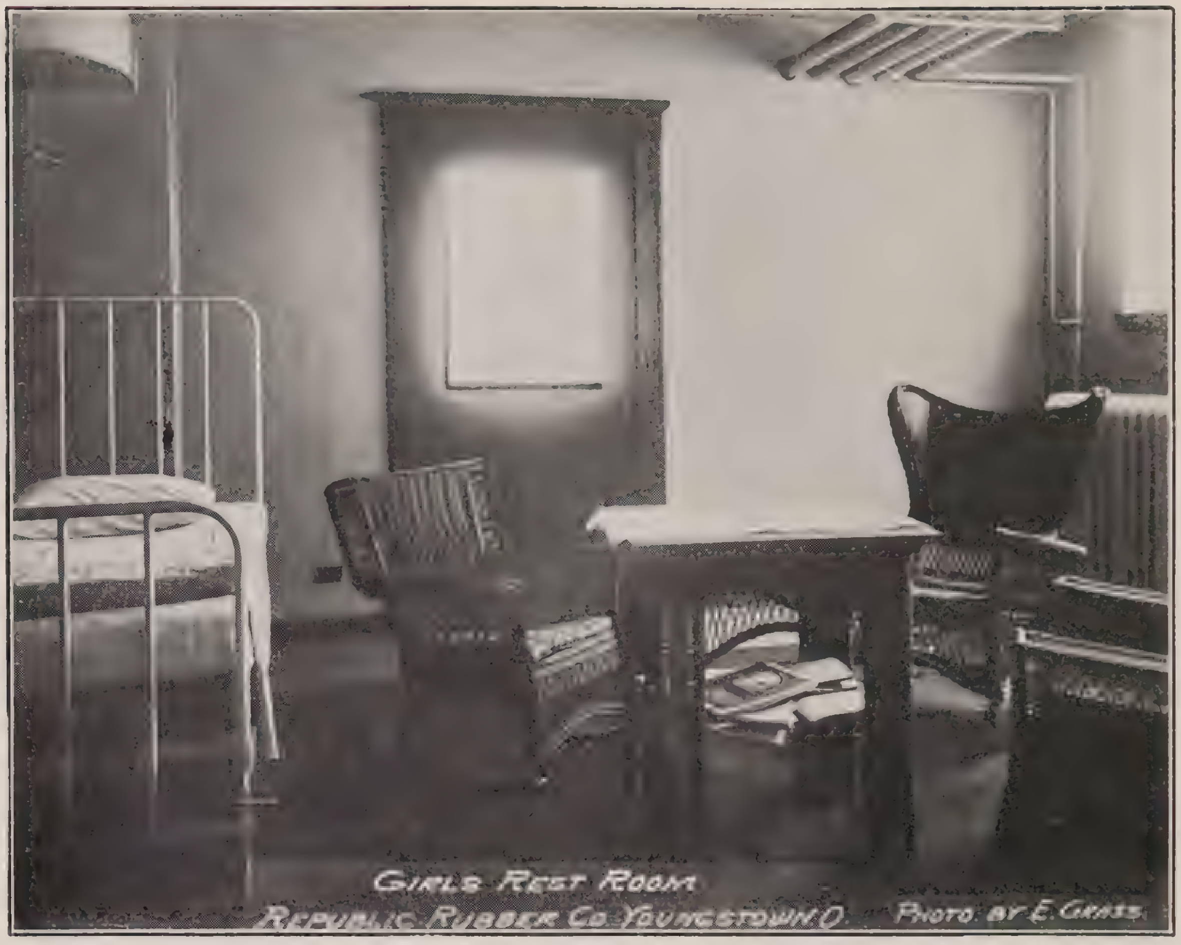

Fig. 18.—The nurses of the Republic Rubber Co. find this rest room to be a great comfort to them.

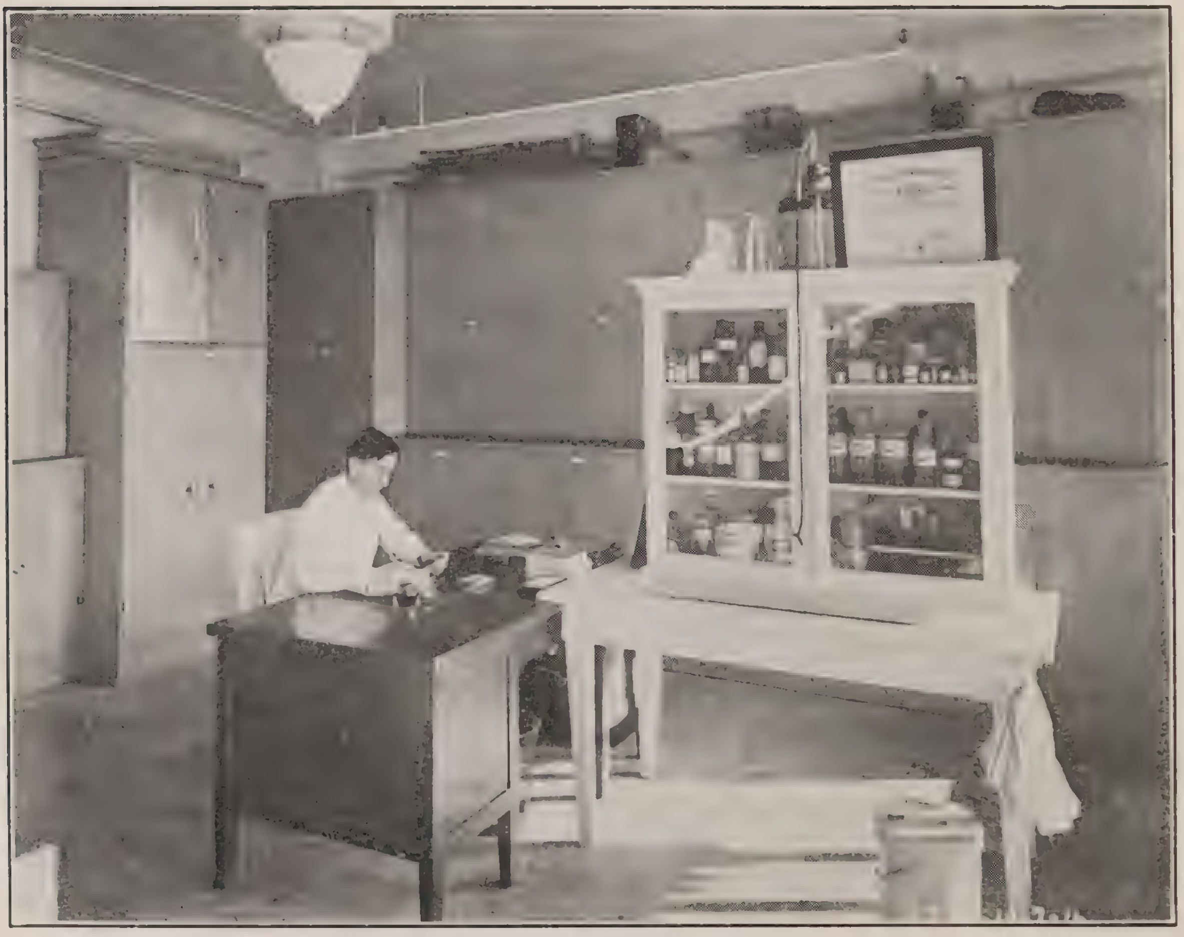

Fig. 19.—View of pharmacy, The Ford Motor Co., Detroit.

On this basis one physician is able to make six examinations per hour or 48 per day. If a company has daily 100 applicants for employment, and it is desired that they be examined in the mornings, there should be four doctors and of course four rooms, with at least two booths to a room.

Wards.—Thirty-seven per cent of the dispensaries have wards for bed-ridden patients. In but two instances are these used to house patients overnight and in one appeared the strange spectacle of men with fractures of the leg bones propped up in bed and working, not on makeshift jobs but work that was necessary to the industry and for which they received wages. Nineteen dispensaries, or 14 per cent of the whole number, have each two wards—one for men and one for women. Wards vary in size from that which is sufficient for one hospital bed, say 10 by 12 feet (in one place it is 7 by 11 feet), to that which is enough for six beds, or about 16 by 25 feet.

The need for wards, or rather beds, is difficult to ascertain, except by experience. Strictly speaking they are for patients only, that is people who require temporary medical attention. They should not be confused with rest rooms, of which there are many, especially in those places where female help is used to any real extent.

The thought occurs that rest rooms should be attached to medical departments, as persons who are forced to seek recumbency during hours of employment should be assumed as being also in need of medical attention or advice. Rest rooms were found in some instances to contain as many as 12 beds. The Goodyear Tire & Rubber Co. has a rest room the walls of which are soundproofed—a good feature.

Operating rooms.—Although operating rooms were found in 18 per cent of the dispensaries, they are actually used for major cases in but two places. In these all operative patients are attended to immediately, then after a recovery period of a few hours are removed to local hospitals for subsequent attention. The other operating rooms are used chiefly for minor injuries such as can be treated under local anesthesia. A sad commentary on the usefulness of the industrial dispensary operating room is that some, when visited, were found to be dusty and not a few gave but little evidence of use. The dimensions of 12 by 16 feet are ample for this room.

Storerooms.—A most necessary room, though one which is often overlooked, is that for the storage of supplies. Eighteen per cent of the dispensaries have them. Lack of foresight in this connection has caused many a dressing, waiting, or other room to become overcrowded with cupboards or cluttered with boxes and packages strewn in confusion and covered with dust. It is true that supplies in bulk may be kept in general storerooms, but, even so, storage places for limited amounts of the supplies and materials that are in daily use are quite essential. The Republic Rubber Co., of Youngstown, Ohio, has solved this storage question nicely by including in their dispensary two supply rooms, each 7 by 7 feet 3 inches and lined with shelves variously spaced from floor to ceiling.

X-ray rooms.—Fifteen per cent of the dispensaries have rooms for the housing of X-ray equipment, but not all of these have dark rooms for the development of the plates, an omission that was lamented by several physicians. Apparently, the installation of X-ray equipment has been an afterthought in some places, as it was not infrequently found set up in odd corners of dispensaries.

There seems to be a tendency to make X-ray rooms small. The splendid new emergency hospital of the Youngstown Sheet & Tube Co., of Youngstown, Ohio, for example, has a room 8 feet 2 inches by 14 feet, which is large enough to hold the equipment but insufficient, as deplored by the chief physician, to permit in addition thereto the satisfactory handling of stretcher patients. The X-ray room of the Bethlehem Steel Co., at Bethlehem, Pa., is 12 feet 2 inches by 16 feet 2 inches, a much better size.

Unless X-ray rooms are to be used also as dark rooms, their walls need not be finished in dark colors. A very beautiful effect has been obtained by the Western Electric Co. at Chicago with an interior finish of white. Their apparatus is finished also in white, with trimmings of nickel.

Dark rooms need not be larger than 6 by 8 feet. They should be painted, of course, with lusterless black.

An important point to bear in mind in connection with X-ray rooms is that they should never be so situated as to become damp, because of the effect of moisture upon the apparatus.

Laboratories.—Laboratories were found in a trifle less than 15 per cent of the dispensaries, a proportion which suggests the conclusion that this very useful adjunct to medicine is not yet fully appreciated. A room 10 by 16 feet makes a good laboratory. Some are as small as 6 by 8 feet, but this size is scarcely enough to putter in and urinalyses are usually the limit of their usefulness.

Clerical offices.—Twelve per cent of the dispensaries have offices for their clerks, and, with the exception of one place, these are restricted to establishments having 4,000 and more employees. The size of rooms for clerical purposes is determined, of course, by the number of clerks to be accommodated, which varies greatly and depends upon the extent to which the doctors develop and utilize their records. A room for one clerk should be at least 8 by 10 feet and for additional clerks proportionately larger.

Dental offices.—Twelve per cent have dental offices, three places having two offices each. It is predicted that this percentage will increase speedily, as there is evidence of a very rapidly growing demand for dental work among industrial workers and a decided inclination among employers to satisfy the demand. The average dental office with one unit is probably 9 by 10 feet. The International Harvester Co. has two such rooms at the McCormick works in Chicago—one used for prophylactic work, the other for permanent work. The Firestone Tire & Rubber Co. has two chairs in its main dental room, which is about 12 by 16 feet, also a chair for extraction, isolated by being placed in a small room of the usual dimensions. The Metropolitan Life Insurance Co., in its New York clinic, secures isolation by placing chairs in stalls which extend down one side of a long room. Being finished and equipped wholly in white, this room presents an inviting professional appearance, which might advantageously be emulated.

Sterilizing rooms.—Separate rooms are furnished for the housing of sterilization apparatus in a trifle less than 10 per cent of the dispensaries and these are limited to establishments having at least 2,000 employees. Sterilization apparatus is often found in dressing rooms and occasionally in operating rooms. Sterilizing rooms, which may be used also for the preparation of dressing materials, should be approximately 8 by 12 feet.

Dark rooms.—Dark rooms for eye, ear, nose, and throat work are very useful, although they are to be found in but little more than 4 per cent of the dispensaries. With the exceptions of two these are mere closets. A desirable size is 6 by 8 feet. They should be finished in lusterless black.

Special examination and treatment rooms.—Patients the examination of whom or whose treatments necessitate disrobing should be invited into rooms especially furnished for that purpose, but such rooms are very few. The usual procedure, if the dressing room is used, is to request the nurse to retire or the patient to pass back of a screen, or he may be taken to any room that happens to be handy. The need for special examining and treatment rooms appears to be generally recognized, but as with the storeroom the need has seldom been realized until after the dispensary has been built. A small room is adequate, say 8 by 10 feet. The Norton Co., Worcester, Mass., has built three small compartments in its main dressing room to satisfy this need.

Attendants' rooms.—Where female nurses are employed, and in some places where attendants sleep in the dispensaries, retiring rooms, with toilets attached, are included in the dispensaries. They may be approximately 10 by 12 feet or larger as desired.

Receiving rooms.—It is a mistake to permit applicants for employment waiting for their examinations, or even patients who may happen to be present, to view seriously injured employees; the impression upon them is bad. This has been obviated in some dispensaries by having special entrances for stretcher patients, which open directly into receiving rooms adjoining operating or dressing rooms. Ordinarily these are nothing more than halls or large vestibules.

Other rooms.—Sears, Roebuck & Co. have two small history rooms each large enough to accomodate a small desk and two chairs. As their name indicates, they are for the purpose of securing the histories of the persons who are to be examined. Some of the more complete dispensaries have scrub-up rooms, where doctors and attendants prepare for operations or extensive dressings. Occasionally a drug room or pharmacy is met with, and finally one dispensary has a morgue.

Toilets.—When dispensaries are more or less isolated, they are equipped with toilets, and where women are employed as attendants or clerks separate toilets are provided for them. It was suggested by a physician who has given much thought to dispensary planning that all waiting rooms should have toilets for the accommodation of patients.

Arrangement of rooms.—A close study of the arrangement of rooms in dispensaries suggests no general plan or basis for standards of arrangement. Nevertheless observations have prompted the laying down of two principles which may prove useful in dispensary planning, and they are these: (1) The rooms which are most frequently used should be most accessible; (2) arrangements should be such as to permit passage in and out without confusion.

Some glaring violations of these principles are to be found. The dispensary of a large Chicago concern may be cited. To reach it elevator service is necessary. Approximately 325 visitors pass in and out of its one door daily, and during the rush hour they meet in more or less confusion. The first room beyond the entrance and connecting directly with the rather wide hall which is used by patients in waiting is the clerks' room, seldom used by patients. Next in order are the offices of the superintendent of nurses and the chief physician, also used but little by patients. Farthest from the entrance are the consultation, dressing, physical examination, and dental rooms, which are of course greatest in demand.

Accessibility may be gained for all rooms by arranging them around the reception room as a common center, as is the case in the dispensary of Armour & Co. at Chicago. Another way is to furnish separate entrances for rooms devoted to special purposes, as has been done in the emergency hospital of the Youngstown Sheet & Tube Co. Separate entrances have been provided there for the ordinary run of dispensary patients, those who seek physical examinations, ambulance patients, and visitors to the executive offices of the medical department. This plan is best. It secures availability, avoids confusion, and safeguards applicants for employment from the depressing effects of viewing injured workmen.

Location of dispensaries.—Three per cent of the dispensaries are located outside of the establishments; 57 per cent at or near the main entrance; and 40 per cent within, at central points. A small percentage, chiefly among steel mills and concerns covering a great deal of ground, have substations, as already mentioned.

In consideration of the fact that dispensaries are principally for the care of injured employees, the central location would appear to be preferable. Even so, the majority are adjacent to points of entrance and, therefore, inaccessible in varying degrees to workmen who become injured. This leads to the thought that other considerations have determined the situating of them. As 33 per cent are connected directly with employment departments, the conclusion might very well be that it is better to cause injured workmen to be sent or transported some distance than to permit applicants for employment seeking physical examinations, and also incapacitated workmen, to visit centrally located dispensaries. In a few places the dispensaries have been split up, the dressing and other rooms necessary to the treatment of patients being centrally located, and the physical examination rooms being attached to the employment departments.

For reasons of location and other conditions, such as being placed on upper floors with stairways as the only means of approach, 45 per cent of the dispensaries are not readily accessible to injured employees. Thirty-one per cent of them are so situated as to be constantly more or less dusty; 13 per cent noisy; 6 per cent smoky; and 5 per cent dark. Twenty-four per cent are housed in buildings furnished for that purpose, some of which are very elaborate.

Principles which influence dispensary planning.—Employers have little conception of what their establishments require in the way of dispensaries, and being aware of their limitations they usually leave the planning of their dispensaries to their doctors and architects. The doctors produce the ideas and the architects draft them into workable plans. No doubt physicians often find it difficult to decide just how elaborate their dispensaries should be, a decision which depends of course upon the volume and variety of work to be done by them in caring for the employees. Although the activities of industrial medical departments will be discussed later, two principles which concern activities and consequently the dispensaries themselves may be mentioned at this point, and they are these: (*a*) It is inadvisable for an industrial medical department to assume functions that properly belong to the community unless the industry dominates the community and therefore has very definite obligations toward it; and (*b*) it is inadvisable for industrial physicians to under-take activities in a necessarily limited way that can be done less expensively and perhaps better by available specialists and in near-by institutions, unless the demands warrant the contrary. For example, the John B. Stetson Co. would not be justified in building a dispensary as long as it is able to effect satisfactory arrangements with the hospital which stands almost in the midst of its own buildings. On the contrary, The Merchants Shipbuilding Corporation, of Bristol, Pa., situated 10 miles from the nearest hospital, is perforce warranted in erecting one. Adjacent to its yards is a village which the company has built for the housing of its employees and their families. The company has very decided obligations to the villagers as well as to its employees. It is warranted not only in erecting a hospital but in providing a safe water supply, facilities for sewage disposal, sanitary supervision, in fact in doing whatever may be necessary to safeguard the health and welfare of the people.

Again, it would be absurd for the Detroit News, which has a very good one-room dispensary, to build another room and equip it with expensive X-ray apparatus to diagnose an occasional fracture, when expert X-ray service is to be had in the vicinity of its building. On the other hand, X-ray facilities are a very useful aid to the physician of any large company, whether the plant be situated close to outside X-ray service or not, as the number of cases in which the apparatus may be of help is sufficient to justify the expense of equipment and maintenance.

DISPENSARY EQUIPMENT.

As a fitting, though possibly facetious introduction to a discussion on equipment, it might be suggested that all industrial dispensaries should have rooms to be used as vaults for the interment of equipment purchased in enthusiasm and subsequently discarded. In this connection a very commendable principle to establish is that no equipment should be acquired until its value has been definitely proven and its need positively confirmed.

To specify the articles of furniture, instruments, and other equipment which are essential is quite evidently out of the question, nor is it practical, as physicians are individual laws unto themselves in this respect. They have their likes and dislikes, and what one uses with splendid results another can not abide. Then again, certain articles are understood as being necessary and are described sufficiently by their names. Everyone knows, for example, that waiting rooms should have chairs or benches and neither of these requires further description. Also, everyone knows that wards should be furnished with beds and that those should be perferably of hospital style and size. For this reason only such articles will be discussed as may be unusual, or for other causes deserve special mention, excepting possibly the dressing-room equipment, and that only to serve as a guide against overequipping.

The best dressing rooms are those which are the most simply furnished. The following articles are suggested for a one-unit room, a unit meaning one dressing center which can be used by two attendants if necessary.

Dressing stand.—Various sizes and styles are used. Generally speaking, the larger the stand and the more shelves and compartments or drawers it has, the more it accumulates in the way of materials that are infrequently used. A stand with a top 2 by 3 feet is a good size. The top may be made of plate glass or enameled steel, with a guard rail on three sides to prevent bottles, jars, etc., from falling off. A cupboard or drawer may be used for the storage of small quantities of bandages, gauze, cotton, and other supplies that are frequently used. In the dressing room of the American Viskos Co., of Marcus Hook, Pa., is a dressing cart, a table on wheels, that was said to be very useful. At the Crane Co., Chicago, a long shelf is used instead of dressing tables.

Waste receptacle.—This is usually an enameled bucket which may be raised by a foot lever. Unless the interior is thoroughly cleaned daily, the bucket soon presents a repulsive appearance. An innovation which prevents the occurrence of such a condition is the paper receptacle, used in the dispensary of the Erie Forge Co., a cylindrical bag supported by a light metal stand.

Stationary washbowl.—In the dressing room of Armour & Co. stationary washbowls are used as dressing stands. Solutions and ointments are kept on shelves erected behind the bowls, within reach of the attendants. Bandages, gauze, and cotton are kept in drawers opposite. Attendant and patient stand in the space between the tier of drawers and the bowl. This is mentioned as being a rather unique, though handy, dressing unit.

In small dressing rooms washbowls usually stand against a wall; in large rooms, near the middle of the floor. In the latter they are most frequently of the pedestal type with flat tops. If gasoline is used for the cleansing of wounds a very convenient attachment is a spigot which throws a fine stream or spray of gasoline, such as may be seen in the dressing room of the Cincinnati Milling Machine Co. In the dressing room of the Midvale Steel & Ordinance Co. at Eddystone, Pa., a bowl is placed convenient to the entrance and is used by patients, who are required to wash their hands before submitting to dressings.

Stools and chairs.—Patients with injuries of the lower extremities must be seated during the application of dressings, but occasionally instances are found when both attendants and patients are seated for all ordinary dressings. Swivel-seated chairs are preferable for attendants; swivel-seated stools for patients. The dispensaries of the Republic Rubber Co., of Youngstown, Ohio, and the General Electric Co., at Lynn, Mass., used elevated chairs for foot patients, similar to those in shoe-shine stands.

Foot and arm rests.—These provide stability for injured members and comfort for patients. The attendants in the dressing room of the Westinghouse Electric & Manufacturing Co., at East Pittsburgh, work seated at ordinary flat-topped office desks, the drawers of which are used as arm rests. Foot and arm rests with basins attached are very handy for mussy dressings and those which require soaking.

Stationary foot tub.—To satisfactorily treat injuries of the feet foot tubs are essential, especially if the conditions under which the employees work are such as to cause their feet to become dirty.

Instrument, medicine, and supply cabinets.—In a few dressing rooms cabinets are used in lieu of dressing tables, but for the greatest part they are present as more or less necessary evils, necessary as storage places for the many instruments and small articles used in dressing rooms and evils as the catch-alls for the odds and ends that gradually accumulate. By building them in walls, as has been done in dispensaries of the Pullman Co. and the Bethlehem Steel Co., cabinets take up no space, appear to better advantage, and serve their purposes equally well.

Operating table.—The operating table, usually of the all-steel, folding variety, is a popular though infrequently used piece of furniture. Ordinarily it is found shoved off into a corner or folded and stowed away. Even so, the operating table is essential in the treatment of certain cases and, although occasions for its use may be rare, it can not very well be omitted unless some substitute for recumbency is provided, such as a bed or a wheel stretcher. A severely plain wood table, somewhat higher than the ordinary operating table is used by the physicians of the Crane Co., at Chicago, for the dressing of practically all injuries. These remarks have not applied to operating rooms and special examination and treatment rooms. In the former an operating table is of course essential; in the latter it is useful. For instance, with the head end semielevated, as with a reclining chair, the doctors of the Packard Motor Car Co. use one in their special treatment room for injuries of the head and face, chest, and upper extremities, as well as in its normal position for recumbent cases.

Nitrous oxide apparatus.—Minor operations are frequently done in dressing rooms, referring particularly to those dispensaries which have no operating rooms, and while ether or local anesthesia may be used, nitrous oxide is so much more satisfactory that an apparatus for its administration might justifiedly be included in the ordinary dressing-room equipment.

Sterilizer.—There are four kinds of sterilizers to be found in dispensaries and they are those which are for the sterilization of instruments, water, dressing materials, and utensils. Ordinarily when all four varieties are present they are set up in sterilizing or operating rooms in the form of a unit. In dressing rooms the prevalent custom is to have only instrument sterilizers, though occasionally water sterilizers and in rare instances utensil sterilizers are found. Evidently the majority of small dispensaries depend upon already prepared and sterilized dressing materials. Whether sterilizers should be heated by electricity, steam, or gas depends upon conditions and personal preference.

Specialist chair.—In establishments where eye cases, mostly foreign bodies on the exposed surface, are frequent, specialist chairs are very convenient. In a few places ordinary chairs with headrests attached seem to serve the purpose quite satisfactorily. When dark rooms are provided, these chairs are of course placed in them, but it is also common to find them in dressing rooms, where their use need not be limited to eye cases. Adjacent to specialist chairs may be placed small tables or even shelves for spuds, wash and solution bottles, and ordinary supplies. A handy accessory for eye work is the electrically-lighted spud. Portable electric-light stands fitted with flexible shafts are also convenient and suitable for use in other than eye cases as well. Lenses, especially of the stereoscopic type, likewise are of decided assistance in eye work.

Magnet.—A few electric magnets were observed. They are of considerable assistance in the removal of embedded foreign bodies. However, there is very properly a decided tendency to refer patients with foreign bodies embedded in the substance of the eyeball to specialists. In fact, the rule in some dispensaries is that all foreign bodies in the eye that can not be removed by an applicator tipped with cotton should be referred to eye men.

X-ray apparatus.—There are several small X-ray apparatus on the market, built particularly for dental work, which serve fairly well in taking pictures of the extremities. As these are relatively inexpensive and easy of operation, there appears to be no reason why all dispensaries which have need for X-ray work should not have one.

Apparatus for treatment of contusions, etc.—There is unquestionably a demand for apparatus to facilitate recoveries from contusions and similar injuries. Vibrators, baking ovens, violet-ray machines and therapeutic lamps of various kinds are used in satisfying this demand, but of their respective merits little can be said; industrial physicians confess that their use is emperical, and probably the demand for them is created largely by a desire to be doing something, which has a stronger appeal to patients than the dispensing of liniments or the recommendation of hot or cold applications.

Towel hamper.—If cotton towels are used, hampers should be available for those which become soiled. The dressing rooms of the Standard Parts Co. are supplied with a pleasing type of hamper which consists of a cylindrical cotton bag supported by a white enameled stand. The towel receptacles at the B. F. Goodrich Co. are cotton bags about 18 inches in length and 7 inches in diameter, supported by metal rings attached to walls in convenient places.

Desk.—When clerical work is done in dressing rooms white enameled steel desks are appropriate and attractive. They are similar in design to ordinary flat-topped office desks, though smaller.

Instruments and supplies.—As has been said the preparation of a standard list of the many incidentals used in dressing rooms is not feasible. As a suggestion, however, to those who may not have determined their needs, the list which is standard for the dispensaries of the Carnegie Steel Co. is presented in detail, with approximate costs as of prior to the war:

One surgical scissors, straight, 5½ inches	$0.70
One surgical scissors, curved, 5½ inches	.75
Two scalpels and 1 curved sharp bistoury in case	4.50
One bandage scissors, 7 inches	1.50
One tissue forceps, 5 inches	1.10
One thumb forceps, 5 inches	.50
Three hemostatic forceps, Kelly's	3.00
One needle holder, Mathieu's, 5 inches	1.25
Two wound probes, 5 inches	.25
One director (groove)	.25
One eye spud	1.10
One magnifying lens	1.00
One United States Army-field tourniquet	1.10
One dozen assorted needles	.40
Two dozen safety pins	.20
One dozen emergency tubes of catgut with needles	2.50
One dozen envelopes Red Cross catgut, assorted	.70
One dozen reels of silk, assorted	.75
One hypodermic syringe in case, military type	3.50
Three wound syringes	.75
One white-enameled pus basin, 10 inches, kidney shape	.60
One white-enameled deep basin, 10¼ inches	.90
One white-enameled instrument tray, 9½ inches	.85
One dozen yucca-wood splints, 4 by 18 inches	.75
Two dozen internal angular wood splints, assorted	7.00
Two dozen bond splints, right and left	9.00
Two dozen gauze bandages, 2 inches	.60
Two dozen gauze bandages, 3 inches	.65
One dozen muslin bandages, 3 inches	.80
One dozen 1-yard packages plain gauze	.65
One pound absorbent cotton in ¼-pound packages	.40
Six glass-stoppered bottles, 4 ounces, in rack: Tincture iodine, carbolic acid, alcohol, tincture green soap, aromatic spirits of ammonia, collodion	2.75
One dozen aseptic wormgut ligatures	2.50

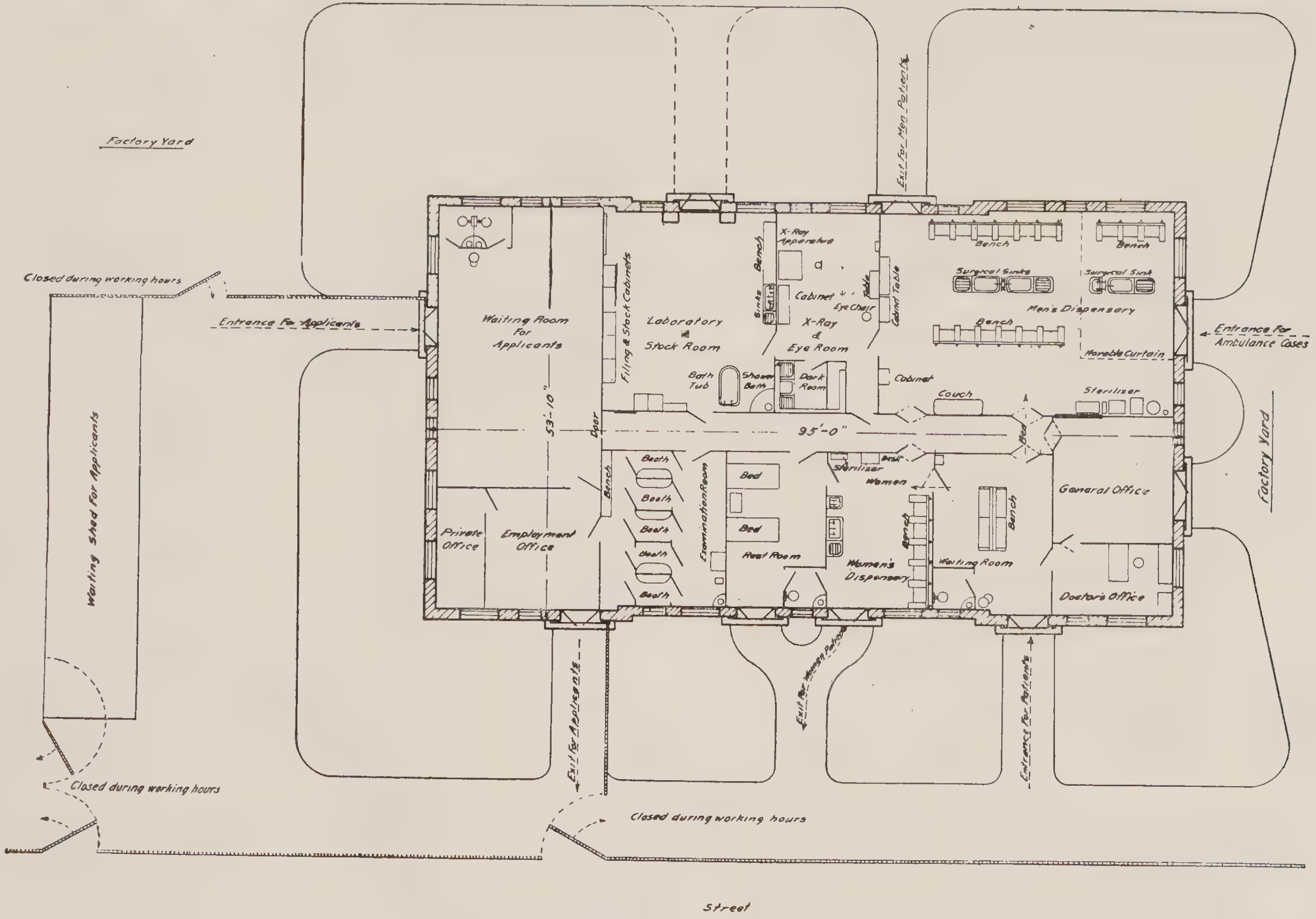

Fig. 20.—Floor plan of medical department (and employment), Lynn Works, General Electric Co. Observe the separate entrance and exit doors.

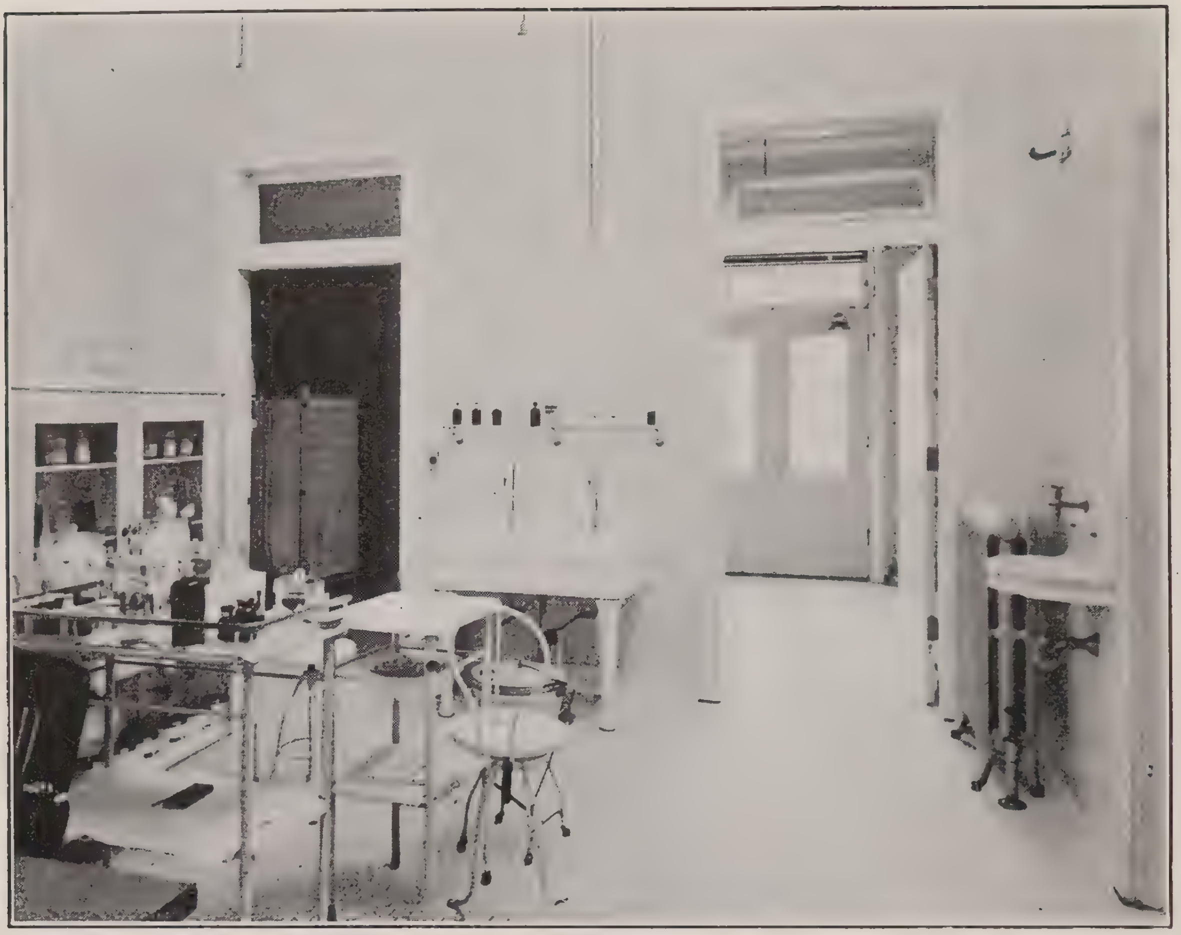

Fig. 21.—A view in the dressing room of The Western Electric Co. Note the attendant's chair, the patient's stool, and the small table upon which the patient may rest his arm.

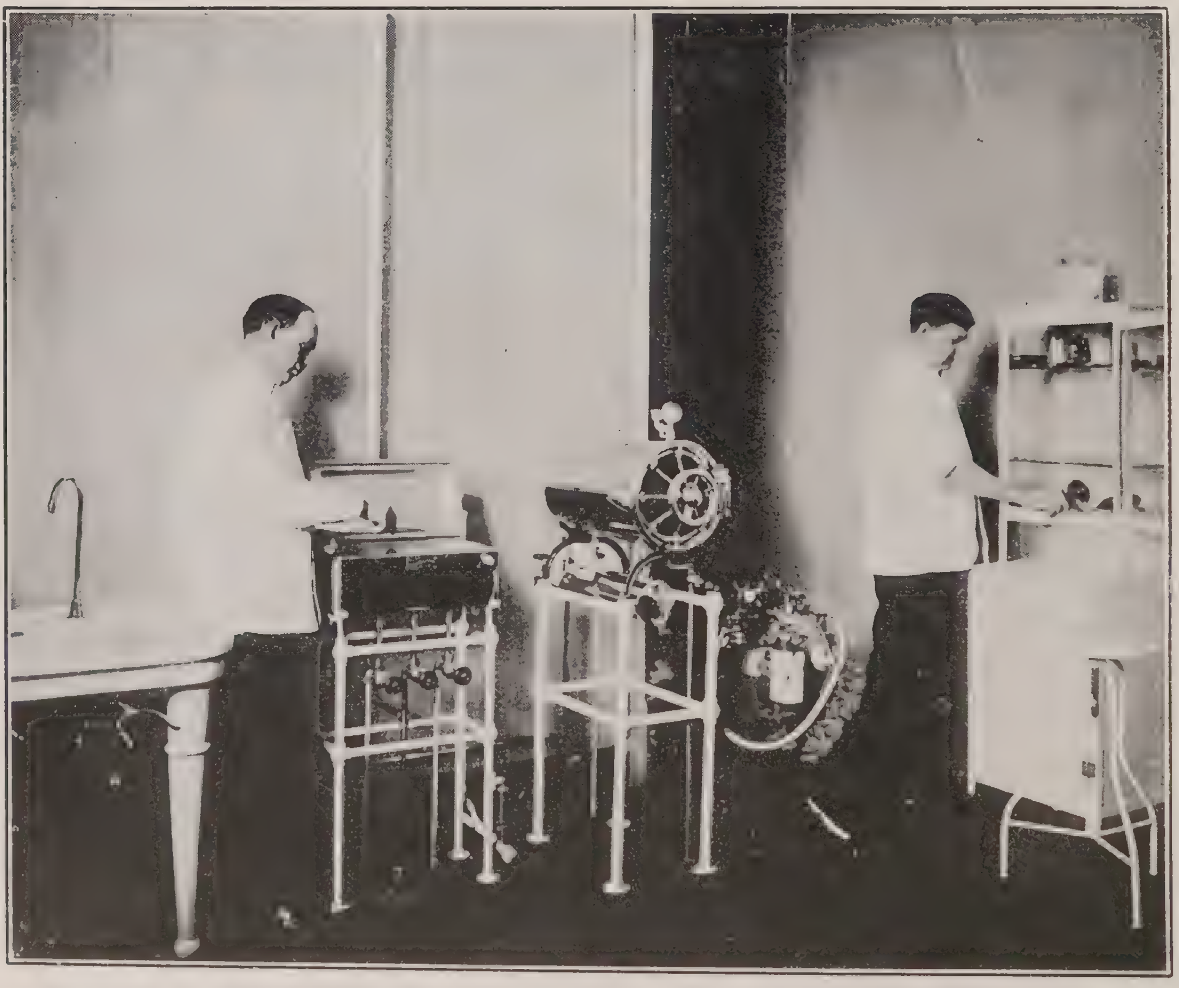

Fig. 22.—A corner of the dispensary of The Graton & Knight Manufacturing Co., illustrating the sterilizing apparatus, a nitrous oxide apparatus, and a small but useful cabinet.

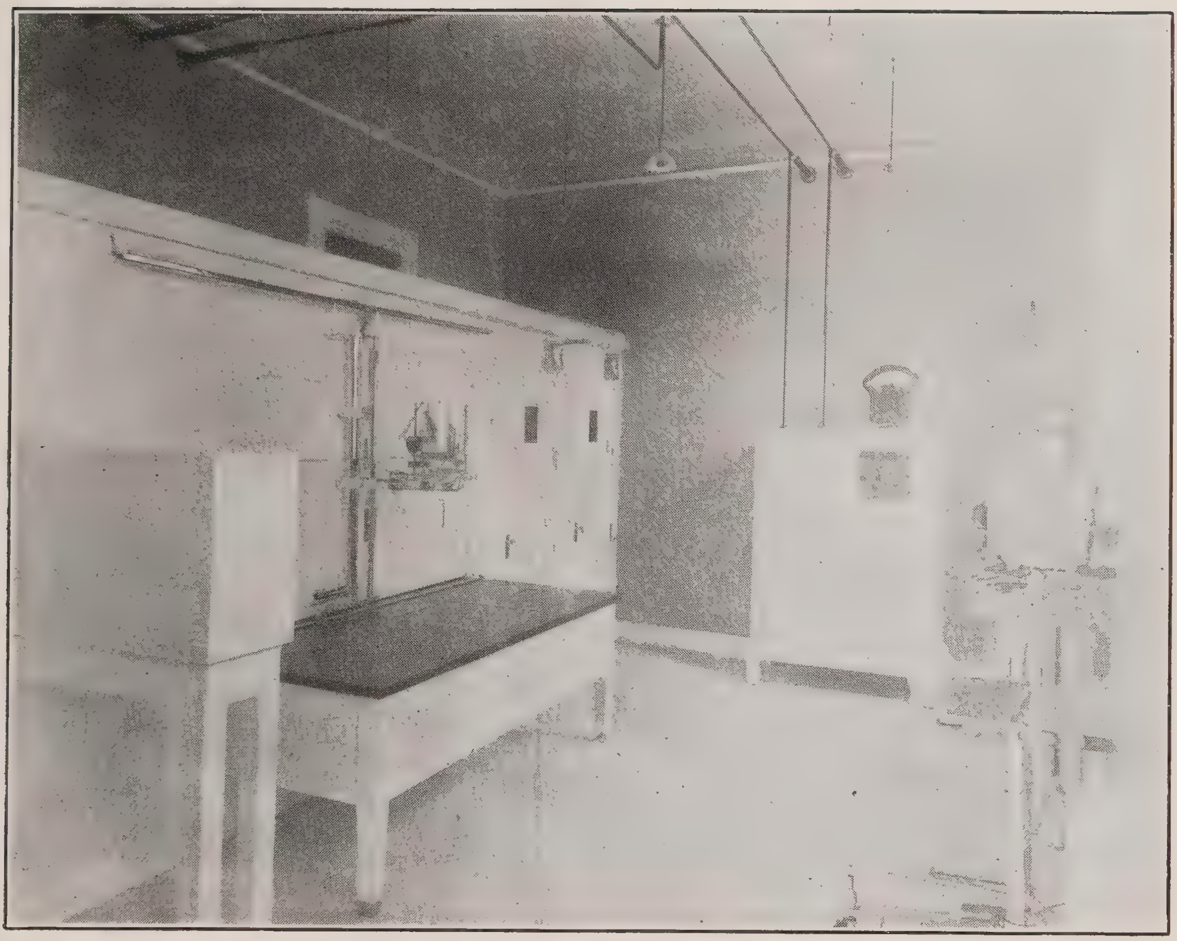

Fig. 23.—The X-ray equipment of The Western Electric Co. is finished in white, with a most pleasing effect.

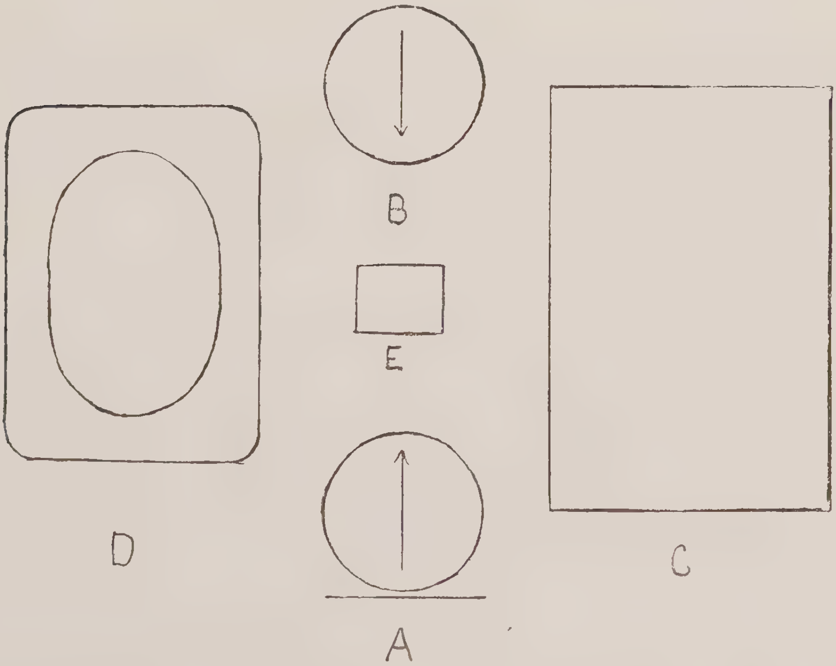

Fig. 24.—Plan of dressing unit which permits attendant and patient to be seated. A, Attendant's chair; B, patient's stool; C, dressing table; D, washbowl; E, foot or arm rest.

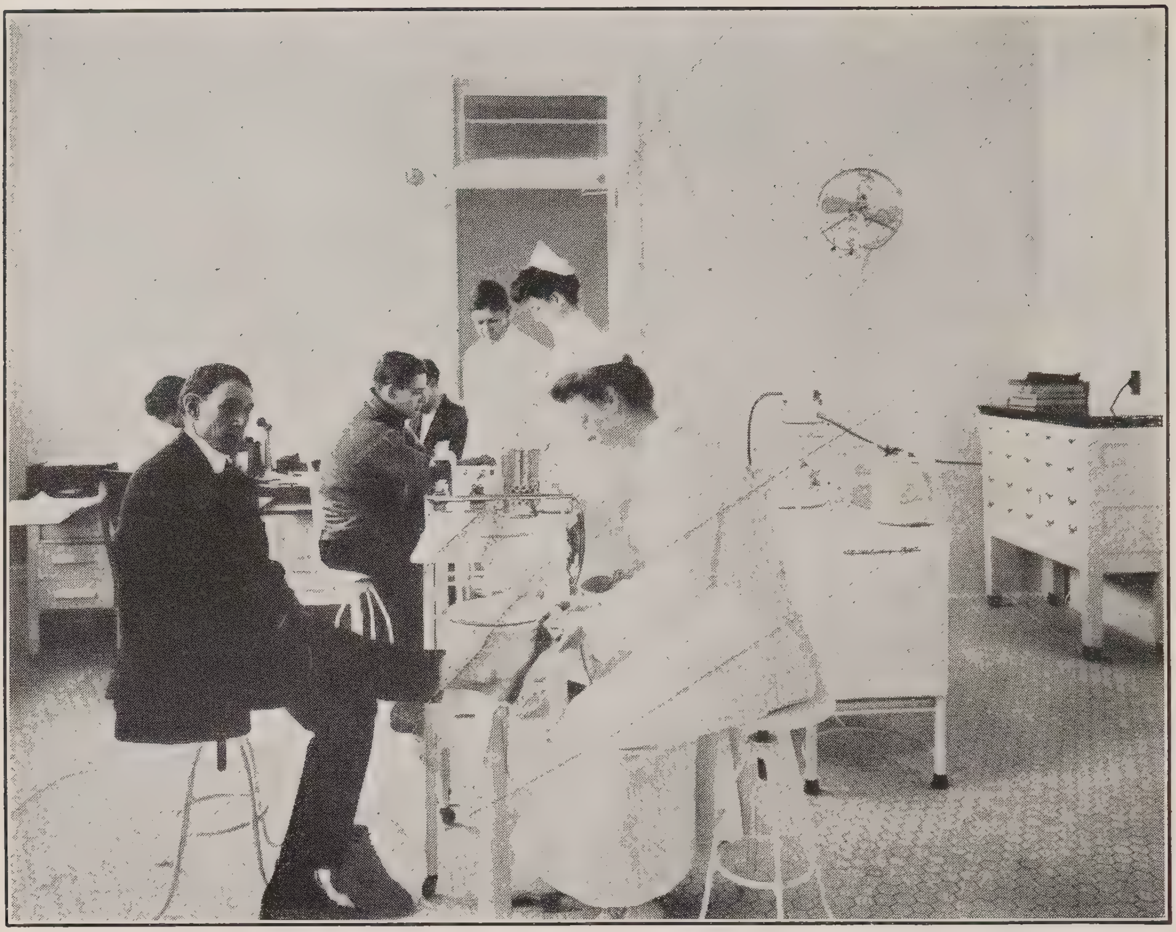

Fig. 25.—Dressing unit in the dispensary of The General Electric Co.

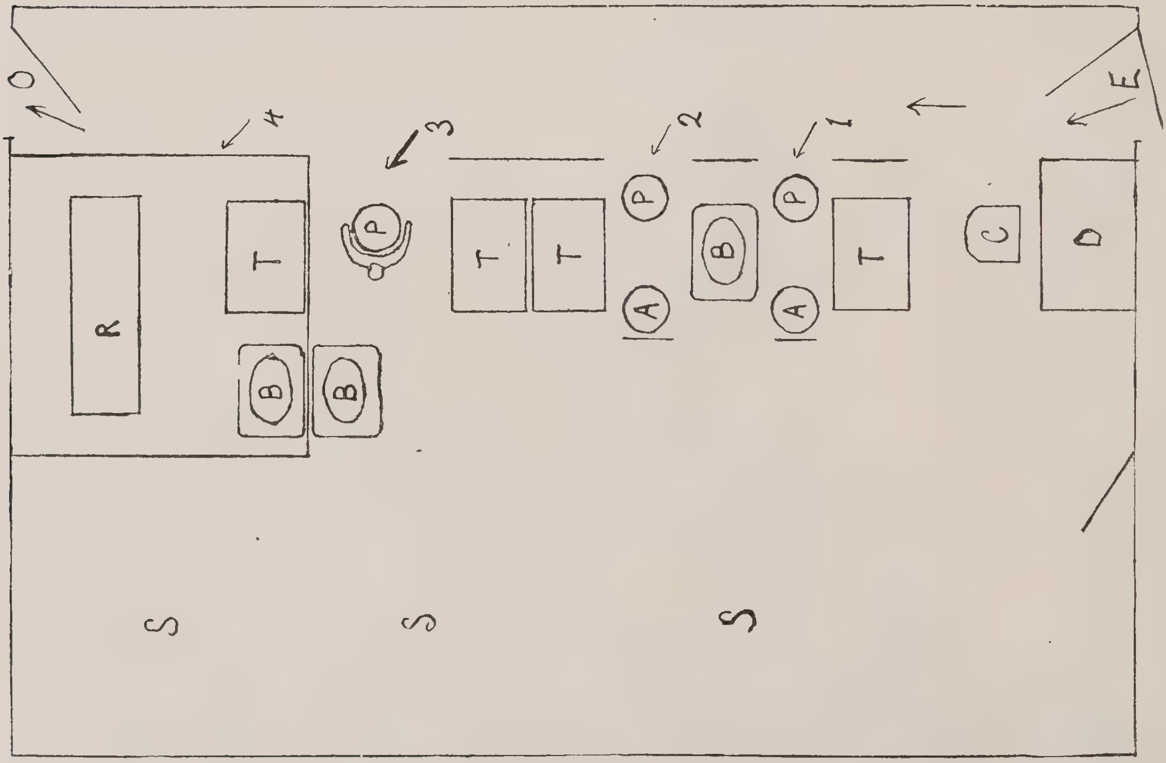

Fig. 26.—Plan of large dressing room based on unit system. A, Chair for attendant; B, washbowl; C, chair for clerk; D, desk for clerk; E, entrance for patients; O, exit for patients; P, stool or specialist chair for patients; R, operating or examination table; S, space for cabinets, sterilizers, etc., used by general utility attendant; W, plenty of window space; 1 and 2, units for the dressing of ordinary hand and foot cases; 3, unit for head cases, including eye, ear, nose, and throat; 4, unit for special cases.

One bottle bichloride tablets (50)	$0.25
One-half dozen eye droppers	.30
One white-enameled medicine container	.15
One canvass-instrument roll (special to fit instruments)	.50
One clinical thermometer	1.00
One pair rubber gloves	.35
One box wooden-tongue depressors	.25
Two stock jars	2.20
One safety razor and blades	5.00
One hair clipper	4.50
One mouth gag	2.25
Total	70.00

One-half pound boracic acid, one-half ounce aristol, one-half pound petroleum, one tube ethyl chloride, one pint creoline, one-half gallon alcohol, one-half pound boric-acid ointment, one medicine-glass (graduate), one hand brush.

Arrangement of dressing-room furniture and fixtures.—In small dressing rooms the custom, almost universal, is to arrange the furniture and fixtures about the walls. In a few of the large dressing rooms this custom has been departed from somewhat by placing the equipment essential to dressing service in or near the center of the room, a departure probably inspired by a wish to systematize dressing-room work. This has led to the recognition of what is known as a dressing unit which consists of a stand, chairs or stools and facilities for cleansing the hands.

There are several types of units, but two will serve as illustrations. The one in use in the dressing room of the McCormick Works of the International Harvester Co. provides means for one attendant and enables both attendant and patient to be seated if desired. The arrangement of its elements is indicated in figure 24 and is such that washing facilities and dressing materials are within easy reach of the attendant. The dressing unit of the Western Electric Co. differs in arrangement; it contains a table to support the arms and hands of the patients, a foot rest, and furnishes means for two attendants. It is illustrated in figure 25. The unit system is undoubtedly an advance toward systematization in dispensary practice, a reform greatly needed in busy dispensaries.

Confusion in dressing rooms has two principal sources. One is the lack of system in the arrangement of the furniture and fixtures, necessitating much passing back and forth of the attendants, and the other is the tendency of patients to crowd in and stand about waiting for dressings.

To illustrate the undesirable in these aspects an instance will be cited. The dressing table is in the center of the room; gauze is kept in its drawers. The rest of the equipment is against the walls. Chairs are scattered here and there. Crowding in at the entrance and occupying about one-third of the space are patients waiting to be dressed. Two doctors and a nurse are working. The nurse has just completed a dressing, and as she goes to wash her hands a man with a bandaged foot takes a chair which happens to be near the dressing table, but with its back to it. The nurse walks around the man to the dressing table, hunts for a bandage shears, then returns to a position in front of the man, kneels down, and removes the bandage. She returns the shears, obtains a forceps, and opening the drawer, secures a bit of gauze. Having tidied the wound, she moves to a waste receptacle and discards the soiled gauze, then returns to the dressing table, and replacing the forceps secures more gauze which she saturates with a weak solution of iodine. This is placed on the wound. Another visit to the dressing table is necessary for cotton and a bandage. The bandage adjusted, she returns for the bandage shears, and finally discharging the patient, she moves to another part of the room to record the dressing. In attending this patient the nurse has kneeled five times and traveled a distance of 50 feet.

An attendant working at a dressing unit conveniently arranged suggests a pleasing contrast to the extravagance of effort and time in the instance just cited. By arranging the units in series, separating them by screens if privacy is desired, the dressing of patients in busy places can be greatly expedited and made relatively easy (fig. 26). The series can be so situated as to extend the length of the room at a distance of 3 or 4 feet from one of the walls it parallels, the space being used as a passageway for the patients. The space between the series of units and the opposite wall may be used for dressing-room equipment and cabinets for storage of instruments, medicines, and supplies necessary to replenish and supplement those which are regular parts of the unit equipment. If demands warrant, one unit may be fitted up for eye, ear, nose, and throat work; another for special treatments.

This plan necessitates the employment of an attendant whose duty it is to assist in the units when needed and to keep them supplied with materials and solutions. It also necessitates the employment of a clerk to receive patients and assign them to units for treatment. Reports of treatments may be noted by the attendants upon treatment memorandums and subsequently filed with or transferred to patients' records.

Equipment for physical examinations.—Examination rooms are severely plain. Two chairs, a small table used as a desk, and possibly an examination table are the usual equipment. The standard accessories for the Carnegie Steel Co. are as follows:

One standard Wahl & Ochs test cabinet	$10.00
One Middletown testing lamp, electrified	8.00
Two blinders	1.00
One acoumeter	1.00
Five colored blanks for test lamp	2.50
	22.50

An electrified ear speculum is handy. In some instances cheap watches are used for testing hearing. A blood pressure apparatus would seem to be necessary.

Dental equipment.—The unit system is preeminently adapted to dental work, and the extent to which dental equipment has been standardized is refreshing. Industrial dental dispensaries are merely dental offices set up in industrial establishments, and although the work is chiefly prophylactic the equipment is practically that which any dentist may have in his own office. Outfitted in white, as is the dental clinic of the Metropolitan Life Insurance Co., in its New York office, a very inviting appearance is made. A list of furniture, instruments, and supplies with prices as of May 1, 1918, which were furnished by the S. S. White Dental Manufacturing Co. for a Philadelphia dispensary, is presented as being suggestive of what is necessary for industrial dental purposes:

FURNITURE AND FIXTURES.

1 diamond chair, black leather upholstery	$250.00
1 S. S. W. folding bracket engine, belt engine arm, with No. 3 Doriot hand piece	192.00
1 contra angle, for hand piece	11.00
1 S. S. W. spittoon No. 6, with table attachment	84.00
1 American cabinet, No. 60A, mahogany	115.00
1 "Bernstein" aseptic table	14.50
1 bracket table, Allen, plain sides	8.00
1 formaldehyde sterilizer	10.00
1 white enamel pail, "Cover for Linen," sani can	3.50
1 Buffalo Bunsen burner, with gas cock	.75
1 Lee Smith cotton holder	1.00
1 J. & J. dental waste receiver	.50
500 cartons	3.75
500 paper cups and holders (Lilly's)	2.75

OPERATIVE.

S. S. W. forceps, 286, 150, 151, 88R, 881, 16, at $4.50	27.00
2 elevators, No. 27C and 28C, large handle	4.70
2 Parke-Davis dental syringes, glass barrel	3.00
1 dozen hypodermic needles, G/25, 3/16	1.50
1 lancet	1.05
1 set Darby Perry excavators, C. S. (set of 37)	14.80
3 dozen black handles, No. 10	16.20
6 C. S. explorers No. 6	1.50
3 L. H. chisels, Nos. 4, 5, 6	2.70
1 sickel scaler, Abbott, No. 5	.90
6 C. S. burnishers, Nos. 27C, 33, 33/90, 27C/70	1.60
2 D. E.—C. S. handles, No. 18	.62
1 C. S. pliers, No. 102	2.60
1 amalgram carrier, No. 5	1.15
1 rubber dam punch, perfected	4.00
1 rubber dam clamp forceps, Browers	3.50

1 molar, R. D. clamp, ivory, No. 40	$1.00
1 bicus, R. D. clamp, ivory (S. S. W. No. 206)	1.00
2 R. D. weights	1.30
2 broach handles, No. 2	1.70
1 subcutaneous syringe, glass	1.50
2 Magic napkin holders, pinafore	.80
1 rubber dam holder, No. 2	1.25
2 cement spatulas, Nos. 22/55, 24/90	1.45
1 cotton plier, No. 11	1.25
3 C. S. mouth mirrors, Nos. 50, 51, 53	3.45
1 mercury holder, No. 3, ebony	.60
1 dozen medicament bottles, labeled as follows: (Lee S. Smith & Son) Iodine, Carbolic Acid, Cloves, Cocaine, Arsenic Acid, Trichlor Acid, Silver Nitrate	9.00
1 gross burs, assorted	13.00
3 dozen Robinson's brushes	2.10
½ dozen rubber polishing cups, medium	
½ dozen rubber polishing cups, small	.50
1 dozen plain mandrels, 303 for No. 7 H. P	2.40
1 dozen Gem points, No. 26, S. S. W., No. 7 H. P	1.50
1 dozen Gem points, No. 26, S. S. W., N. A	1.50

SUPPLIES.

1 pound mercury	4.00
5 ounces True Dentalloy filings	8.75
1 6-ounce cabinet S. S. W. zinc cement	10.00
1 box, 500, J. & J. cotton rolls, No. 1, 6 inch	3.00
1 box, 500, No. 2, 6-inch dental napkins	4.00
1 jar J. & J. floss, 150 yards	1.45
1 yard S. S. W. med. 5-inch rubber dam	1.75
1 dozen packages sandpaper, disks, 5/8, Nos. 1–2	1.44
1 dozen packages sandpaper, disks, 1/2, No. 00	1.44
1 package flint strips, medium	.50
½ gross S. S. W. cleaners	5.50
1 dozen smooth broaches	.80
6 packages temp's stopping, white	2.40
3 sheets gutta percha base plate	.90
Total	874.80

Odds and ends.—A drinking fountain is a comfort to patients. A dental spittoon is a useful accessory to mouth and throat work. Large bathtubs are valuable aids in the treatment of heat cases. In the dispensary of the American Car & Foundry Co., of Detroit, the tub is considerably elevated to ease the work of the attendants. The Willard Storage Battery Co. has a fountain in its dressing room for the dispensing of a carbonated solution of magnesium sulphate to lead workers. In the dispensary of the General Electric Co., at Erie, are a large number of white enameled pitchers which are used by patients to soak injured hands while waiting for dressings. On the wall of the dressing room of the Atlantic Refining Co., Philadelphia, is fastened a plain white enameled board, about 3 by 4 feet in size, upon which odds and ends of adhesive plaster are kept until occasions arise for their use. The Pullman Co. uses a board covered with gauze for the same purpose. A finger guard made of two pieces of tin, each 3/8 by 5 inches, fastened together at right angles with all arms equal, may be bent over an injured finger end and fastened with adhesive tape, enabling the patient to work with a fair degree of comfort.

Transportation facilities.—It is universally the custom to provide stretchers, or substitutes, for the transportation of patients who can not walk to the dispensaries, and usually the safety departments are responsible for their proper placement and return after use, though occasionally this is a function of police departments. The stretchers are mostly of the ordinary type, but in places where location may necessitate the removal of the patients from inaccessible spots the Stokes navy stretcher is used, or ropes with belts attached may be provided. The Ford Motor Co. uses three-wheeled stretcher carts. Robert H. Foerderer, Philadelphia, uses the factory transportation system, which consists of trucks that move on tracks laid in all departments. A clever location for a stretcher in a building of several floors is in the elevator, as with the National Lamp Works, Youngstown, Ohio. A special signal brings both elevator and stretcher quickly.

Establishments of great size frequently use ambulances for the transportation of patients to their own dispensaries in lieu of stretchers. Ambulance service to hospitals was found to be available in all instances.

ACTIVITIES OF INDUSTRIAL MEDICAL DEPARTMENTS.

Certain functions and activities of industrial medical departments have already been discussed in connection with other subjects in this report. Only those which have not been considered and those which require further elucidation will be taken up in this section.

Industry is realizing more and more the utility of preventive medicine. Nevertheless, the necessity of caring for the people who become injured is still the most evident and convincing reason for medical service, and because of this the predominating function of industrial medical departments is naturally the care of injuries.

Treatment of injuries.—Little need be said relative to the treatment of injuries, as methods are more or less standard, although certain details, such as the choice of antiseptics, vary from time to time according to current medical opinions and the experiences of individual physicians. The essential consideration, so far as employers and employees are concerned, is that the latter, when injured, shall be returned to their jobs with as little loss of time and impairment of function as is possible. In fact, if employers, and possibly the working people themselves, see any criterion for estimating the efficiency of their physicians, it is in the average of the disability periods of injured employees.

Table 13.—*Classification of activities under whole-time, part-time, and detached (on call) medical service.*

Activities.	Whole-time.	Part-time.	On call.
Number studied	67	51	37
Treatment of minor injuries	67	51	19
In doctor's offices	....	....	18
Treatment of major injuries	34	42	37
By consultants	33	9	....
Treatment of minor illnesses	63	42	3
Treatment of major illnesses	3	2	....
Treatment of serious eye injuries	4	....	....
Nursing of the sick and injured	5	2	....
Dental prophylaxis and emergency aid	7	6	....
Permanent dental work	4	2	....
X-ray examinations	23	4	....
General laboratory service	10	....	....
Physical examinations for employment	51	17	1
Of process workers only	3	3	1
Of food handlers only	....	1	....
For benefit associations only	3	2	....
Inspections of establishments	24	3	....
Health bulletins	23	10	1
Health talks	13	5	....
First-aid instruction	13	2	....
Assistance in safety work	20	5	....
Direction of safety work	3	....	....
Visiting of incapacitated absentees	12	5	1
Supervision of cafeterias	2	1	....

While the character of injuries is fundamentally the determining factor in disability periods, physicians have it in their power to influence them considerably through the application of skillful treatments and the exercise of wisdom in recommending other forms of work when employees are incapacitated from that which is regularly expected of them. Industrial physicians, therefore, are confronted with the necessity of making two decisions which entail knowledge of working conditions, or job requirements, in connection with each new injury. These are: (*a*) Should the injured person be permitted to continue at work and, if so, should he be returned to his usual job, or should he be transferred to other work? (*b*) What treatments are best fitted to restore normal conditions, or conditions that are as near normal as it is possible to obtain and will enable the employee to resume his regular work, or that which is similar, in the shortest possible space of time?

In recommending injured men to accept light work instead of laying off, doctors sometimes meet with objections from them because of the possible fact that compensation for their injuries may be nearly or quite the equivalent to the pay for light work, in which case they may prefer to lay off. Some companies—as, for instance, the Norton and the White Motor—prefer to pay injured employees assigned to light jobs the wages they were receiving prior to injury, although these may be more than the light work is worth, solely in order to keep them at work. This plan has merit in that it not only impresses injured workmen favorably but that it also tends to prevent feelings of indifference toward work, which disabilities occasionally arouse.

Not all industrial physicians treat major injuries. The proportions that do are as follows: Whole-time, 51 per cent, part-time, 82 per cent, and detached, 100 per cent. There are occasions, of course, when all doctors have need of consultation, but there must be some significance in the relative proportions of whole-time, part-time, and detached physicians who do their own major surgical work. Aside from the evident conclusion that part-time and detached physicians are chiefly surgeons with whom industrial service is incidental, the probability is that strictly industrial physicians find it better to refer serious cases than to attempt their care themselves. Possibly this tendency is due to a lack of special surgical training in those who refer their cases, but it is also suggestive of the impression that industrial medicine, under the guidance of those who concentrate upon it, is becoming too broad in its scope for individual physicians to attempt to cover the whole field. This impression is further supported by the fact that other varieties of special work are being referred to special practitioners, as for example laboratory and X-ray work. In large establishments, where demands justify, physicians are employed for limited duties, such as the physical examination of applicants for employment. The medical department of The B. F. Goodrich Co. refers patients ill with diseases which are difficult to identify to a Cleveland hospital for diagnosis. In time they may add a diagnostician to their staff.

Treatment of minor ailments.—Colds, constipation, headaches, and other minor complaints are treated by 94 per cent of the whole-time medical departments, 82 per cent of the part-time departments and 8 per cent of the detached physicians. Some are frankly indifferent toward trivial cases and, although they treat them, the patients are not encouraged to solicit further attentions. Medical departments which do not treat trivial ailments justify the omission on the grounds that they should not treat conditions for the relief of which employees should consult their own doctors, or they hesitate in the fear that the giving of treatments may imply liability for further care and perhaps the payment of compensation or damages in event of serious and possibly fatal illness.

Treatment of major sicknesses.—Somewhat over 4 per cent of the whole-time departments and a trifle less than 4 per cent of the part-time departments treat serious as well as minor illnesses. With one doctor it is purely a personal matter. Although nominally a whole-time physician, he is using his industrial connection as a means for cultivating a private practice, and by attending without charge all employees who become sick and consult him he hopes to further this end. In other places where medical service is extended to seriously ill employees it is through the instrumentality of benefit associations, and the doctors are likely to be employed by the associations although they attend injuries as well as sickness. Ordinarily, when benefit associations provide medical attention, the industrial physicians supervise only, the employees being permitted to secure their own doctors. This supervision is frequently of a most perfunctory character and consist of social visits and entries on forms evidencing incapacity.

Treatment of eye injuries.—Foreign bodies on the surface of the eye are very common in industry, and attendants, as well as doctors, become quite adept in their removal, but deeply imbedded particles are rightly considered as being referable to ocular surgeons. In four establishments oculists are employed, chiefly on part-time basis, and in two of these their work is limited to traumatic eye cases, including foreign bodies and other trivial injuries.

General laboratory service.—Fifteen per cent of the whole-time medical departments have laboratories equipped for general work, although not all of them have physicians who devote themselves exclusively to laboratory work. There are the same needs for laboratories in industrial dispensaries as elsewhere in the practice of medicine, and the fact that there are so few indicates that the major portion of industrial medical departments, although they may refer some work, are not availing themselves fully of the privilege of practicing medicine scientifically. It was surprising to find, for example, that in very few instances do physical examinations include urinalyses. On the other hand some scientific work is being done, such as may be found at the Carney's Point works of the Du Pont Co., where blood counts are made monthly on all workers in the amido compounds.

It may be that industrial medical departments do not have sufficient funds for the equipment and maintenance of laboratories and the employment of laboratory experts. It may also be true that many industrial physicians, particularly in small medical departments, have neither time nor inclination for laboratory work. The plan adopted at the Larkin Co. appears to be practical and comparatively inexpensive. There the doctor is training a keen-minded, ambitious nurse to become a laboratory technician and she is rapidly coming to be of great assistance to him.

Physical examinations.—Industrial workers are examined physically for several reasons which may be epitomized in the word "protection." In this, as in other branches of industrial medical work, the primary beneficiaries are the employees. Their health and earning power, which constitute the capital upon which they do business, are protected, and as these are distinct assets to industry, their protection redounds to the benefit of the employers, safeguarding them

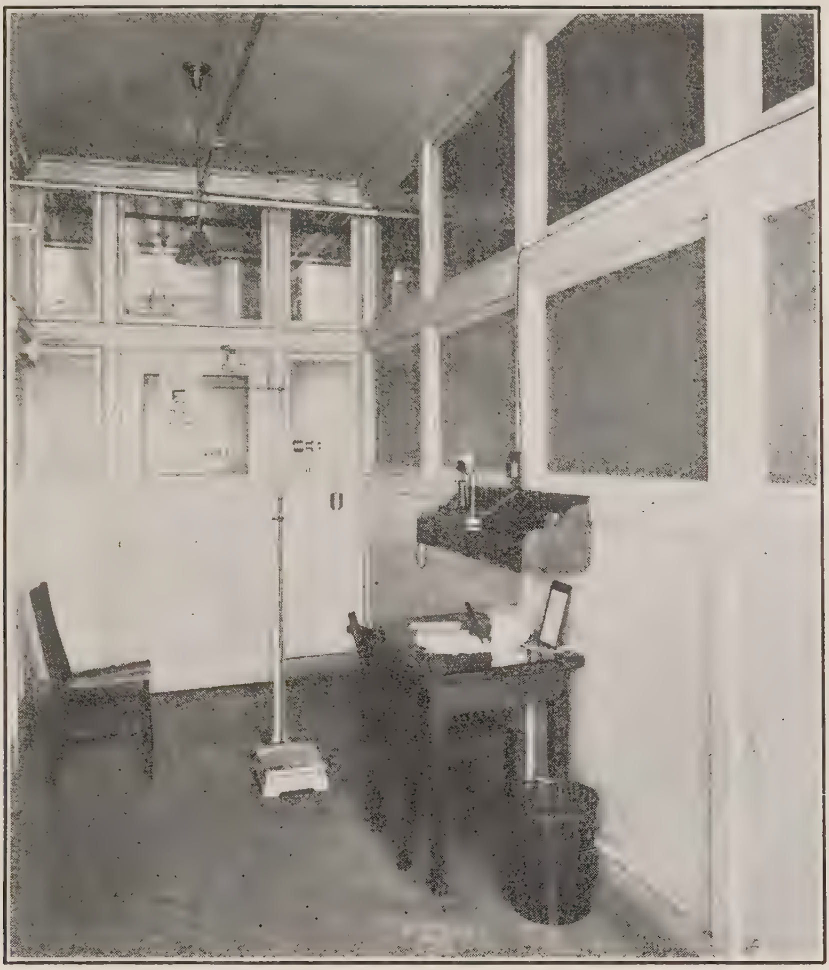

Fig. 27.—Examination room at Lynn Works, General Electric Co.
Note simplicity of equipment.

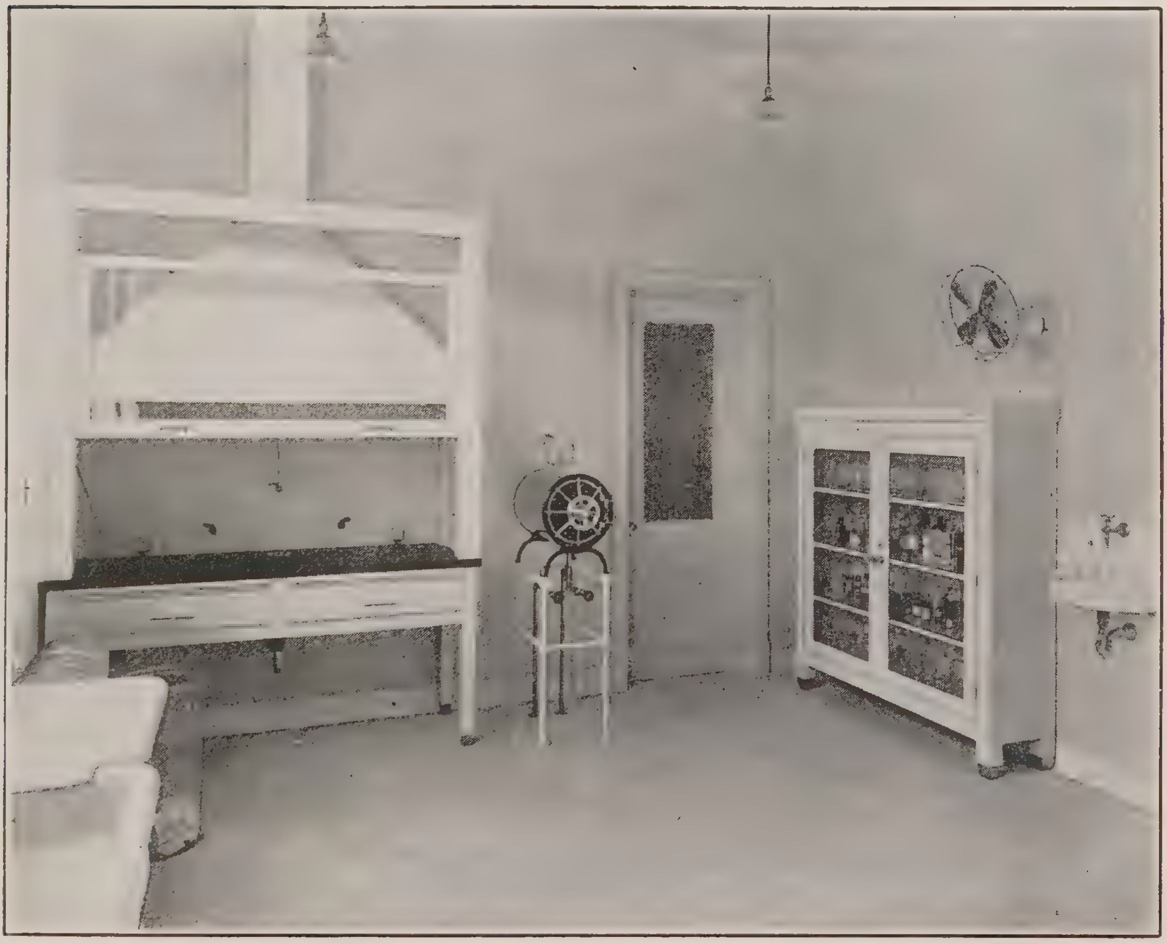

Fig. 28.—A corner of a very fine industrial clinical laboratory.

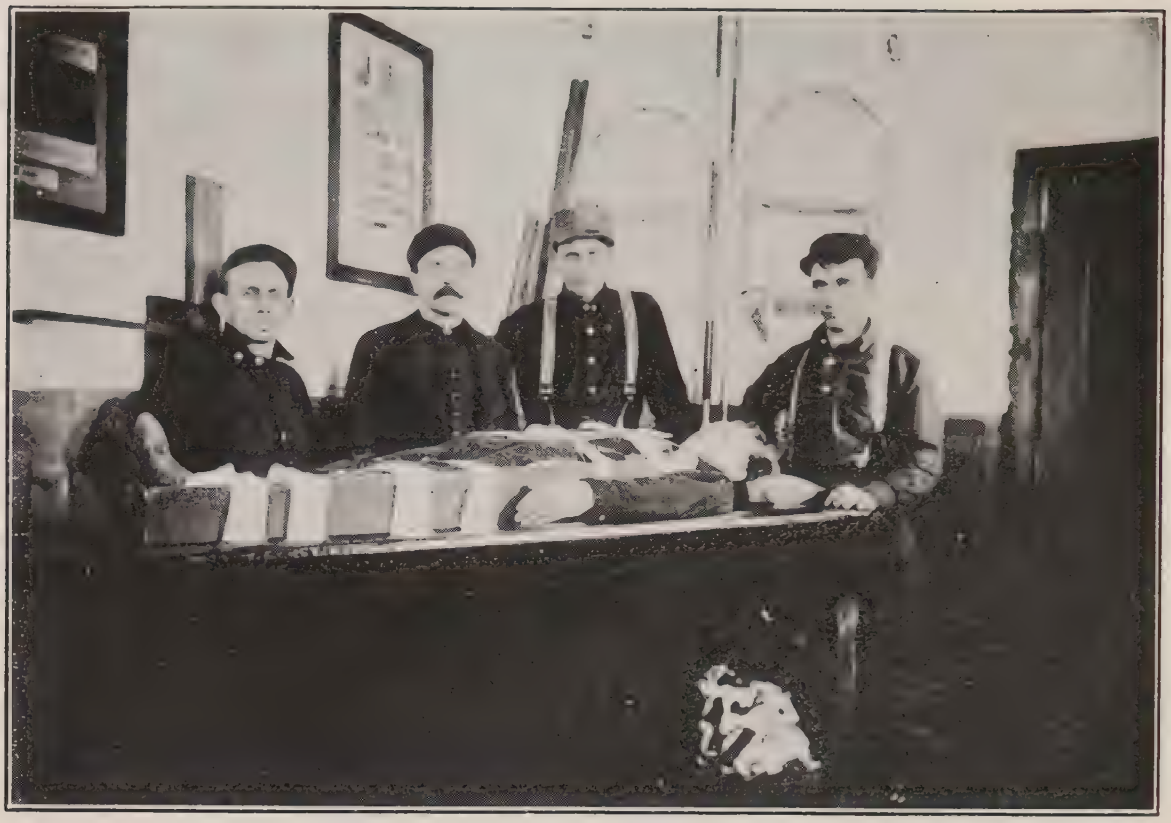

Fig. 29.—Training workmen in first aid.

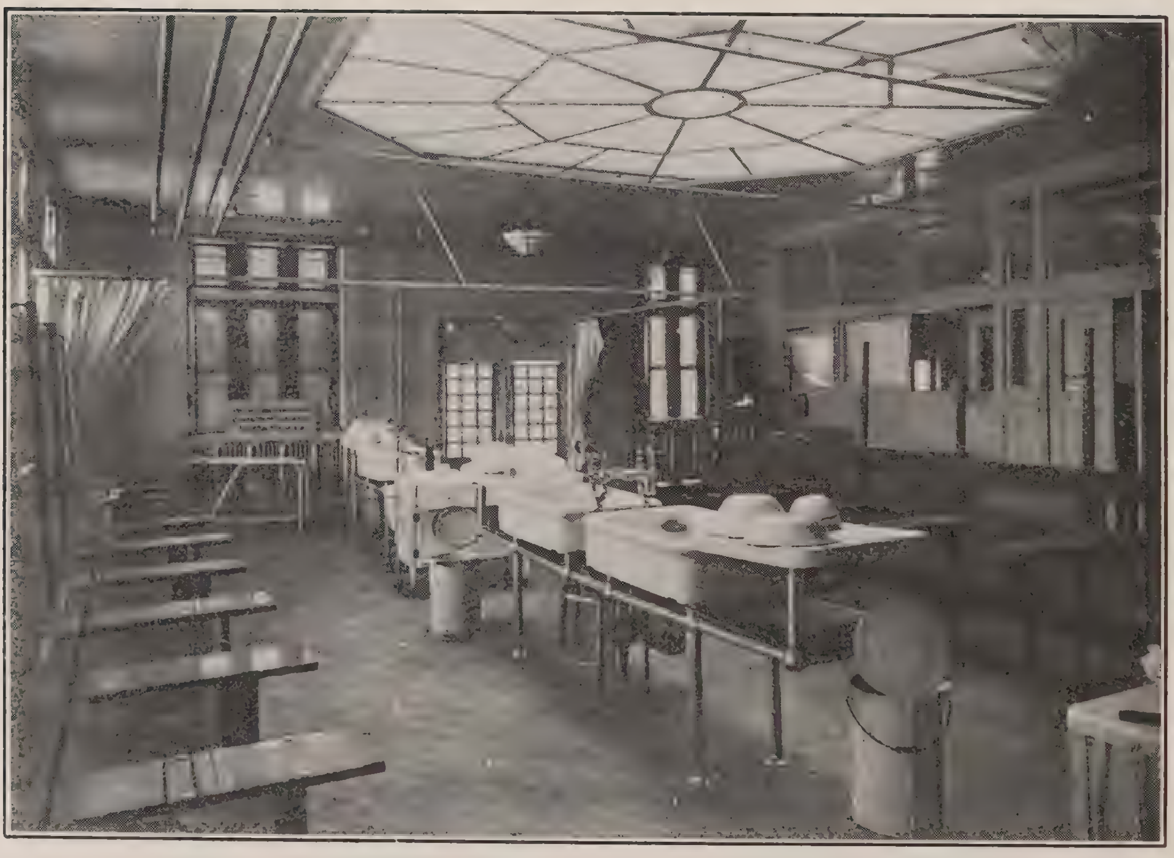

Fig. 29a.—Interior of men's dressing room at The Lynn Works, General Electric Co.

against inefficiency among their working forces because of ill health. To secure this protection, employees are examined for the ascertainment of their fitness to stand the strain of the work that may be expected of them and are reexamined on appropriate occasions to check, in their incipiency if possible, those impairments which may arise.

In seven establishments, which are a trifle less than 5 per cent, process workers only are examined; in one place food handlers only; and in five, or 3 per cent, only applicants for membership in beneficiary associations are examined. In one large establishment all employees are given superficial inspection prior to employment and later, upon application for membership in the benefit association, are examined.

Examinations for employment, as usually made, are exceedingly superficial, amounting to little more than inspections for obvious defects, and although the avowed purpose is properly to place employees, the real purpose in some places seems to be the exclusion or the recording of defects that might subsequently complicate injuries or become involved in claims for compensation. The fact that some concerns ceased to require examinations of applicants for employment when labor became scarce would appear to confirm the impression that their motive had been the exclusion of defectives. In times of labor shortage, when employers are forced to bid for labor and accept all applicants regardless of their qualifications, age, or sex, the use of physical examinations as an aid to the intelligent assignment of employees and their subsequent maintenance as efficient workers would seem to be more necessary than in times when labor is abundant.

If physical examinations have not measured up to expectations, and criticisms are appropriate, the fault may very well be with the industrial physicians themselves, in that they have failed to make their examinations sufficiently thorough, have failed to study job requirements, and have neglected to follow up their findings. Under these conditions employers see no beneficent effects, because there are few or none, and the rejection of the manifestly unfit stands out as the principal if not the only result that they may expect. In large establishments where doctors are engaged solely for the examination of applicants for employment, there is possibly an excuse for them, as their duty is completed when they have finished the examinations, and there are no others in the medical oeganizations to follow up findings. The employees simply pass from observation by the medical departments until injuries or other conditions force them to reappear. And possibly the speed at which most industrial physicians must work causes them to gloss over the refinements of the examination and subsequent supervision. Whatever the cause may be, and however extenuating the circumstances may appear, the superficiality of the average physical examination as done in industry will ultimately prove ruinous to the expectations of industrial medicine, for the the physical examination is the basis of effective health work.

Somewhat more than one-half of the establishments visited require examinations of those who seek employment—one-half had not yet seen the value of the examinations—and the moment a labor shortage appeared a few of them dropped the requirement. They also had failed to perceive the real value of the examination. This is regression, and at a time when employees and industry must put forth unusual efforts and labor under unusual conditions, a time when both need the support of all measures that are capable of protecting health and securing efficiency. As the theory of physical examinations is fundamentally right, the only logical conclusion is that the theory had not been well applied in those places where regression has occurred. The lesson which industrial physicians must learn is that of the value of thoroughness, and under no circumstances should it be sacrificed to speed or any other circumstances. There are, of course, many industrial physicians who do their work thoroughly in this respect, and who live up to the ideals of industrial medicine.

The details of the procedures followed in making the examinations have not been mentioned as they are standard to the practice of medicine. There is one feature, however, that seems to merit some consideration, and that is the method used in testing vision. It is customary to make distance tests only, but inasmuch as practically all the work industrial workers have to do is close work, this appears to be insufficient in that it is not a test of near vision. Although distance tests may be necessary and possibly a fair test of eyesight, it is suggested that examinations be made to include near vision as well.

That whole-time departments, generally speaking, render more varieties of service than part-time departments has been repeatedly in evidence; also that part-time departments render more than detached physicians. The disparity is strikingly brought out by a comparison of the percentages of those that examine applicants for employment. The percentages are these: Whole-time, 75 per cent; part-time, 33 per cent; detached, 3 per cent.

Note.—There is much talk about fitting workmen to their jobs, speaking from the standpoint of physical qualifications, but very little evidence of its being scientifically done. In order to do this properly and effectively, the doctors should study the physical requirements of all the various factory operations, a task to which they do not readily adapt themselves. It would appear, therefore, that if a comprehensive study were made of job requirements in the various industries, relating particularly to physical and temperamental qualifications, and the results of such a study were made available to industrial physicians, they would be in a much better position than they are now to apply the knowledge obtained by physical examinations to the proper placement of industrial workers.

Health instruction.—In association with the physical examination health instruction is a powerful instrument for the prevention of disease. The first essential to successful teaching is favorable attention. This is gained for examining physicians when they tell the people they are examining of the defects that are found, and talks appropriate to those defects are certain in their influence.

The American Seeding Machine Co., Richmond, Ind., presents each new employee with a small folder, explaining why there is the dispensary, how and when the employees should use it, and setting forth the salient provisions of the Indiana workmen's compensation act.

Sixteen per cent of the establishments issue health bulletins. The majority of these use the bulletins of the National Safety Council. In 12 per cent health talks are given. In preparing talks or bulletins industrial physicians will do well to imitate the advertising man and make them simple in language and to consist of but one thought.

First aid.—First aid, in the sense that temporary treatment is given by more or less trained fellow workmen, is a thing of the past, unless circumstances are such that skilled attention is not readily available. The general argument against first aid is that many workmen who receive trivial injuries regard the first aid as sufficient treatment and neglect to report at the dispensaries. Complaints were also made that boxes were not kept supplied and were used as storage places for other things, such as workmen's wearing apparel, tools, lunches, etc. But there appear to be conditions where first aid is essential. The Bethlehem Steel Co., for illustration, has workmen trained to apply protective dressings and transport injured men to dressing stations. The Westinghouse Electric & Manufacturing Co. has men specially trained to administer artificial respiration by the prone-pressure method. In the Chicago establishment of Sears, Roebuck & Co. nurses answer all emergency calls, carrying first-aid bags with them. This company also has small first-aid kits, containing iodine, small applicators tipped with cotton, and dressing materials, from which protective dressings are obtained prior to the patient's visit to the dispensary. The first-aid jar devised by the National Conference Board of Industrial Physicians is unique and practical. It is a glass jar containing the usual supplies and medicaments in packages and bottles. On the under side of the lid are the directions for rendering first aid.

Scientific instruction of the medical staff.—The medical staffs of the Erie Forge Co. and the Erie Forge & Steel Co., consisting of two doctors and six nurses, meet every two weeks for the discussion of scientific topics. The topics are assigned to nurses as well as doctors, carefully prepared and seriously discussed. Recognizing the merit of this effort on the part of his medical staffs and wishing to encourage it, the president of the companies presented them with a fund for the purchase of books and magazines appropriate to industrial work.

Cooperation with public-health authorities.—There is a regrettable tendency among industrial physicians, as with physicians in general, to neglect the reporting of communicable and other reportable diseases to the public-health authorities. Where close cooperation has been effected between industrial concerns and municipal departments of health, results advantageous to both have accrued. This applies not only to the control of the ordinary communicable and occupational diseases, but also to venereal diseases, tuberculosis, social matters, child welfare, and other municipal nursing activities. It may extend to the safeguarding of water, milk, and food supplies. An example of this cordial cooperation was found in the medical department of the Larkin Co., Buffalo.

Sanatoriums and vacation colonies.—There is a growing inclination on the part of industrial concerns to provide recreational and rest-cure facilities for run-down, enervated, and tubercular employees. Sears, Roebuck & Co. have a farm to which tubercular patients are sent with splendid results. The Crane Co. has a convalescent camp at Buffalo Rock, near Chicago, where run-down people can be kept and taught how to live, an institution of great health educational value. The Larkin Co. has its County Club, similar in character and purpose. This company has also effected an arrangement with the Y. M. C. A. for those employees the doctor may choose to prescribe exercise for. These and similar activities supervised by industrial physicians make potent contributions to the prevention of illness among the working people.

The following is a summary of industrial medical activities designed to coordinate with the program discussed in Sections 3 and 4, a program that is gaining more and more favor among employers as being essential to satisfactory labor relations:

1. Treatment of injuries in dispensary, home, or hospital, by physician, attendant, or consultant, including orthopedic and reconstructive surgery when necessary.
2. Opinions as to disabilities from injury and recommendations as to compensation awards.
3. Rehabilitation of impaired workers.
4. Consultation and service, including dental, for the alleviation of ailments that become evident during hours of employment.
5. Assistance in obtaining skilled medical, dental, and nursing attentions when employees themselves are unable to procure them.
6. Visits on sick absentees to assist in treatments, to render social aid, or to instruct.

7. Regular factory inspection designed to uncover conditions that are inimical to health, and written recommendations to proper officials for their correction.

8. Studies of the effects of methods, processes, and machinery operations upon health and body functions, relating to posture, eye strain, monotony, speed, poisons, etc. Written recommendations to proper officials when effects are found to be harmful and advice to employees which will enable them to minimize the harmful results of processes from which hazards can not wholly be removed.

9. Physical examinations of applicants for employment, and written recommendations to employing officers relative to applicants' fitness for work.

10. Examinations of applicants for reemployment when the periods of absence warrant them.

11. Examinations of employees when their shop efficiency falls off, unless the reasons are evidently not physical; advice and treatment, or aid in obtaining treatment, to such as need it; and written recommendations to foremen when deemed wise.

12. Examinations of employees returning to work after sickness or injury and written recommendations to employing officers and foremen if employees are not fully restored.

13. Examinations of employees who do not feel well or do not appear well to their foremen or fellows; advice to employees when it is indicated; and written recommendations to foremen if altered working conditions are essential.

14. Examinations of workmen ceasing employment after having been exposed to special health hazards and explicit records of their conditions.

15. Frequent examinations to follow up previous findings.

16. Monthly examinations of all process workers, those who may be engaged in any work that may in any way have ill effects, and of food handlers.

17. Epidemiological service including intimate cooperation with municipal health authorities.

18. Health instruction by personal talks in the homes or factory, by lectures, posters, or pamphlets.

19. Records of data that will assist in the prevention of accidents and sickness.

20. Records of facts that will enable employers and employees to obtain equitable compensation adjustments.

21. Records of information that will show the scope and value of all medical activities.

22. Studies of facts and data with the view to developing in scientific knowledge and usefulness.

23. Contributions to scientific and trade publications.

24. Attendance at meetings of scientific societies.

25. Constant efforts to merit and retain the confidence of the employees and the approbation of the employers.

26. Frequent conferences with those in authority.

27. Cooperation with other establishments and local, State, and national health authorities.

28. And finally the admonition to organize, deputize, and supervise, remembering always that anything which is important enough to do is sufficiently important to be done well.

RECORDS AND REPORTS.

Industrial medical departments keep records of injuries and illnesses and the volume and variety of services necessary to their care; make daily and monthly reports on the same; keep records of factory inspections; also records of physical examinations; and make reports designed to assist in the payments of proper amounts of compensation and in the prevention of accidents.

In the beginning of the study it was earnestly hoped that standards of forms for the recording and reporting of industrial medical activities might logically be evolved, but the diversity of opinions among the physicians relative to records and reports has stifled this hope. The systems of filing records and making reports, furthermore, are determined by and made to conform with the systems in favor in the various establishments. Under the circumstances, to picture and describe the most representative and practical of the forms found in use has seemed to be the best that can be done. They are classified according to their purposes and discussed as follows:

REQUEST FOR MEDICAL ATTENTION.

1. *Of dispensary physician or attendant.*—This is a small card or paper (Form 30), made out by the foreman, authorizing the passage of sick or injured employees to the dispensary, and vouching for them. In its simplest form it gives the date, name and number of the employee, is addressed to the doctor with the request that he render the necessary attention, and is signed by the foreman. Occasionally it is made in duplicate, the foreman retaining the copy, or forwarding it to the safety department.

FORM 30.—*Request of physician in company dispensary for medical attention.*

THE TOLEDO FURNACE CO.

......................191...

....

Please render necessary medical attention to

Name.. No.............

Signed..............................

In the Chicago establishment of Sears, Roebuck & Co., the request, which is also a pass, is made in duplicate and the patient carries both to the dispensary, where the original is stamped to indicate his times of arrival and departure. This is returned to the foreman by the patient when he goes back. The duplicate is kept by the medical department and is numbered, the last number each day indicating the total number of patients for that day.

On the reverse side of the pass to hospital of the Western Electric Co. is a notice to the chief of the department in which the employee works (Form 31), indicating the date and hour of the employee's appointment for subsequent treatment.

FORM 31.—*Notice to foreman of employee's engagement for redressing.*

[This is on the reverse side of the pass to the dispensary, issued by the deparment chief.]

Chief of department: Have this employee report at the hospital on date and hour indicated below:

Date.	Hour.	Date.	Hour.

Employees shall give this pass to the chief of department after each visit to the hospital.

Spaces are provided on the dispensary order of the B. F. Goodrich Co. for the doctor to indicate whether or not the patient may return to work (Form 32), and if so at what time he should appear at the dispensary for further treatment. This dispensary order serves also as a leave of absence permit, if the doctor so recommends, and when signed on the reverse side by the foreman.

FORM 32.—*A dispensary order which may also be used as a notice to foreman of employee's next appointment at the dispensary and as a leave of absence permit, if the doctor so recommends.*

THE B. F. GOODRICH CO.

Dispensary ☐ Hr. A. M. Date................
Dental clinic ☐ P. M.

Please render necessary services to:

Name..P. R. No.............

Signed...

This employee is O. K. to return to work, but should report to { Dental clinic / Dispensary } for further attention on..

This employee is unable to work. Please sign Leave of Absence on reverse side.

....

Remarks: ....

....

....
Health Dept.

A slightly different form in which are combined a pass to the dispensary, a notice to the foreman of the disposition of the patient and a permit to leave is used by a concern whose dispensary is outside of the establishment (Form 33).

Form 33.—*Request for treatment with a portion which may be used by the medical department as a pass in disposing of the patient and a portion to be used in notifying the foreman.*

Date................, 191...

For treatment at Emergency Hospital:

Name..............................

Check No. ....

Department ....

Remarks ....

....

....

....

Foreman.

No. 1.

Emergency Hospital Pass.

Name..............................

Check No. ....

The above employee has received treatment and has been sent

To work.
To hospital.
To home.

.... Nurse,

Gateman to retain this.

No. 2.

Foreman:

Check No. ....

is / is not } in condition to return to his usual duties.

.... Nurse,

To be returned to foreman.

The dispensary request used by the Carnegie Steel Co. is regarded also as the foreman's report to the physician of the accident (Form 34). It is returned to the foreman when the patient is able to resume work, with a statement to that effect from the doctor. The foreman indicates that the employee has resumed work and sends the card to the accident department.

Form 34.—*Request for treatment, used also as a notice of termination of disability.*

Foreman will return this card to accident department when man resumes work.

Carnegie Steel Company.

Foreman's report of accident.

Case No. ....

Plant .... Date .... Hour ....A. M. / P. M.

To Company Surgeon:

Please attend to Mr. ....

Check No .... Department.................... Residence No. ....

Street .... Witness ....

Check No. .... Address witness ....

....

Foreman.

Kindly allow Mr. .... to return to work.

Date ....

....

Company Surgeon.

Resumed work ...., 191 . A. M. / P. M. ....

Foreman.

2. *Of detached physician or hospital.*—Another form is a request for service and an authorization for the physician's bill (Form 35). The stub is retained as a memorandum. The order is occasionally made in duplicate, the copy being sent to the accident or compensation department.

FORM 35.—*Request for medical service of private physician, with authorization for the charges.*

The Buckeye Steel Castings Co., Columbus, Ohio.

Date ...., 19...

....

Check No. ....

Issued to

....

Charged to

....

Issued by

....

THE BUCKEYE STEEL CASTINGS CO.
Columbus, Ohio.

Date ...., 19...

....

....

Please render necessary service to

.................................., No. ....

Expense chargeable to

....

The Buckeye Steel Castings Co.

Per ....

The form used by the Chicago Ship Building Co. consists of four sections—the order for necessary attention, a preliminary report from the doctor, and two certificates of discharge, one to be mailed to the company and the other to be presented by the employee upon his return to work.

FORM 36.—*A form which contains a request for attention, a preliminary report and two notices of the termination of disability, one to be mailed to the company, the other to be delivered by the employee upon returning to work.*

CHICAGO SHIP BUILDING CO. Order No.......... A. R. No..........
South Chicago, ...191..

To S. B. MacLeod, M. D., Room 2, Columbia Block, 9215 Commercial Avenue.
Please give necessary attention to..
Address.. Check No...........
Nationality.............................. Age...... Married or single...........
Occupation..
Date of accident......................... CHICAGO SHIP BUILDING CO.
Time of accident......................... By......................... 1

Order No.......... A. R. No..........
CHICAGO SHIP BUILDING CO. South Chicago, ...191..
South Chicago, Ill.

This is to certify that..
Check No.....is able to resume his work beginning on the .....day of ....191..
Signed..................................Surgeon.

Surgeon will detach this slip and give to injured employee immediately upon termination of disability.

Employee must present this to employment office before returning to work. 2

Order No.......... A. R. No..........
CHICAGO SHIP BUILDING CO. South Chicago, ...191..
South Chicago, Ill.

I have to-day issued certificate to your employee who has been under my care, as per your order number above, to the effect that he is able to resume his work beginning on the.............day of.............191..

Signed..................................Surgeon.

Surgeon will detach and mail this slip to company immediately upon termination of employees' disability. **3**

CHICAGO SHIP BUILDING CO. Order No.......... A. R. No..........
South Chicago, ...191..
I hereby certify that I personally attended
Name of injured man.. Check No.......
Occupation..................................on..........................191..
His injuries consist of..
....
Length of disability..
Where sent after accident..
Signed..................................Surgeon.

Surgeon will mail this report at once to company. **4**

3. *From injured absentees.*—When the medical department of the William Cramp & Sons Ship & Engine Building Co. learns of an injured absentee who has not received treatment by them, he is sent a postal card (Form 37) informing him of the privilege which the compensation act gives him, and also a return card upon which he may make a request for treatment.

FORM 37.—*Request for attention by injured employee who has not been seen by company physician.*

Accidents to the company's employees at the works of
THE WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO.
Philadelphia.

Date....................................
Gentlemen: I am injured and unable to visit your dispensary.
I desire {my own physician at my own expense
your physician, without cost,} to attend and visit me.
Kindly notify my foreman.
Check No..................
Address.....................
Signature..................
Fill out and mail if unable to report when required.

REQUEST FOR TRANSPORTATION.

1. *By ambulance or taxicab.*—As with the request for medical attention, this slip (Form 38) constitutes an order for service with directions and an authorization for the bill.

FORM 38.—*Request for ambulance or taxicab.*

UNITED ALLOY STEEL CORPORATION.

Date..................................
..........................Taxi.....................................Ambulance
Please take check No......................to
Dr..........................Office......................................Hospital
....
Signed.....................
Mail this with invoice.
Signed.....................

2. *Record of stretcher calls.*—The Ford Motor Co. records information relative to calls for stretchers (Form 39).

FORM 39.—*Record of stretcher call.*

No......

STRETCHER CALL.

Date............

Location..

Call sent in by..Phone No..........

Time call rec'd..............Left Hosp..............Ret'd Hosp..............

Call made by...

Call received by...

Patient's name..Number..........

Remarks..

....

....

ORDERLY PASSAGE OF PATIENTS.

1. *Dispensary pass.*—This is a card which gains admission to the plant for incapacitated employees who are able to appear for treatment (Form 40).

FORM 40.—*Dispensary pass, used by incapacitated employees who are able to appear at the plant for treatment.*

The Yale & Towne Mfg. Co.

HOSPITAL PASS

To Gatekeeper:

Admit..No. ....

for treatment at hospital.

Date............ ....

Mgr. Service Bureau.

2. *Dispensary pass record.*—It is of advantage to keep a record of the passes issued (Form 41). Other data, such as times of arrival and departure, time lost, etc., may be kept on this record.

FORM 41.—*Dispensary pass record.*

THE WM. CRAMP & SONS SHIP & ENGINE BUILDING CO.

DISPENSARY PASS RECORD

Date, ——

Check No.	Name.	Acct. No.	Cause No.	Nation.	Age.	Out.	In.	Time lost.	Remarks.	Pay.

Return card to dispensary.

3. *Appointment list.*—To prevent patients from being delayed in the waiting room, the physician of the Studebaker Co. at one of its Detroit plants has worked out an engagement list. This is a schedule of five-minute periods running from 7 a. m. to 5 p. m. Appointments are indicated by the insertion of check numbers or names. If patients do not appear promptly telephonic requests are made of their foremen. If patients learn prior to the time of their appointments that they will be unavoidably delayed, their appointments may be changed and substitutions made. This plan might be used in large dispensaries by furnishing each dressing unit with an engagement list.

4. *Appointment cards.*—An appointment card which the patient carries with him serves as a reminder of his engagement for the next treatment. Its disadvantage is that the patient may lose it, and frequently does, a contingency which may be avoided by having the patient give the card to his foreman upon returning from treatment.

Form 42.—*Appointment card, indicating to the patient and his foreman the time fixed for the next dressing.*

——— ——— ——————19—

Dept. Check No.

Name....................

Foreman of department: Bearer has been instructed to report to dispensary for treatment on date last punched below. Will you please see that he is sent so that he can report promptly at hour indicated. J. A. Gould.

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31		

REPORT AT EXACT TIME PUNCHED BELOW.

X 11 a. m. X 11:15 a. m. X 11:30 a. m. X 11:45 a. m.

The appointment card (Form 42) may be used for several purposes in addition to that for which it is primarily intended—as a notice to the foreman, as a pass and a record of attendance at the dispensary. A slight variation from this which also provides for a record of attendance is found in the card used by the Sun Shipbuilding Co., Chester, Pa. (Form 43).

Form 43.—*An appointment card that shows the date the patient is told to return and th date he does return for treatment.*

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Sun Shipbuilding Company.

FIRST AID ROOM. Injury No. ......

Name..

Check No.................... Department..

You are hereby instructed to return for next dressing on date punched in column of red figures. Bring card with you.

Black figures to be punched to indicate date of dressing.

That which is used by the Youngstown Sheet & Tube Co. (Form 44) contains also an evidence of recovery. Another revisit card is designed to show the time the employee loses in going for treatments.

FORM 44.—*An appointment card that is also an evidence of recovery.*

THE YOUNGSTOWN SHEET & TUBE COMPANY.

Card of instructions to injured men.

English language. Report No. ......

Date.	
1	16
2	17
3	18
4	19
5	20
6	21
7	22
8	23
9	24
10	25
11	26
12	27
13	28
14	29
15	30
	31

READ THIS.

You must follow instructions given you by company surgeon and report regularly for dressings, at the time and place designated. Failure to report for dressing as directed will result in dropping your name from benefit list and company will not assume further responsibility of the case.

Carry this card with you and show it each time you report for dressing, and when discharged by the doctor exchange this card for working card, which you will give your foreman when you return to work. You will not be allowed to return to work without the working card.

Bearer.., Check..............
is now ready to resume work.

Date ....
Surgeon.

In one establishment sick and injured employees register at time-recording clocks on leaving their departments for the dispensary and on returning.

5. *Notice to foremen of appointments.*—Where foremen are previously informed of the visits their workmen are expected to make at the dispensary, they are able to plan accordingly and to see that the workmen go at the specified times. This information is sometimes conveyed by the patient, on returning from treatments, through the medium of a card illustrated in Form 45, or if several employees of one department have engagements, the foreman may be given a list of their names [a simple example of which appears in Form 46].

FORM 45.—*Notice to foreman of employee's appointment at the dispensary.*

THE ELECTRIC STORAGE BATTERY CO.

DEPARTMENT OF SANITATION AND ACCIDENT PREVENTION.

..............................191
Mr. ....
(Name.) Foreman..........................Dept.
Mr. .... Key number .... is under my professional care.

Please have him report to me for further treatment on ....191...., at ....
....M. D.

FORM 46.—*Foreman's list of his employees' appointments at the dispensary.*

ELECTRIC AUTO-LITE CORPORATION

.... 191..

Mr.., foreman

Dept.......................

Notify the following employees to report at dispensary for dressing:

............................191 ....A. M..................P. M.

Number	Name
....	....
....	....
....	....

A more elaborate form appears in Form 47. As previously specified, these notices are occasionally combined with the request for treatment, the patient's dispensary pass, or the time record of his dispensary attendance.

FORM 47.—*Foreman's list of his employees under treatment, indicating if employees are still under treatment, have recovered, or are absent on account of injury.*

DODGE BROTHERS' FACTORY HOSPITAL.

Mr............................ Date......................191..

Dept.......................

The following is a clock number list of employees in your department who are receiving treatment at our factory hospital.

Kindly check off (in the O. K. column) those who consider it not necessary to continue treatment.

Indicate those receiving treatment and those absent account of injury.

Return this list to factory hospital promptly.

Check No.	O. K.	Receiving treatment.	Absent on account of injury.	Check No.	O. K.	Receiving treatment.	Absent on account of injury.
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....

6. *Notice to foremen of unkept appointments.*—To follow up unkept appointments a special inquiry blank (Form 48) is used by the Carnegie Steel Co. This blank helps to check up patients who have advanced so far toward recovery that they themselves deem treatments no longer necessary, and it enables the doctor to transfer the injury record to inactive files.

FORM 48.—*Notice to foreman of employee's unkept appointment.*

CARNEGIE STEEL COMPANY.

Surgeon's notification to foreman.

Mr..
Foreman.

Name....................Check No.......Dept.......Date of injury.................

has failed to report for.....................as directed.

....
Surgeon.

To the Foreman:

The following questions must be answered without delay:

1. Has this man returned to duty? Yes......or No......
2. Was he required to show surgeon's "Return to Work Card"?......
3. Why was he not required?...
4. Do you know if he has found employment in some other department of the works?..
5. Do you know if he has left the employ of the company?..............

WM. O'NEILL SHERMAN,
Chief Surgeon.

Please return at once to Company Surgeon.

In the Armour & Co. dispensary the physicians prefer to have such patients report in person, and the notice sent to the foreman carries that request. At Henry Disston & Sons (Inc.) the notice of engagements and notice of unkept engagements are combined.

7. *Notice to injured absentees who have not been seen by company physician.*—This is a post card which is mailed to injured absentees who have not reported at the dispensary. It calls attention to a clause in the compensation act relating to forfeiture of compensation if the injured workman refuses reasonable surgical, medical, and hospital services, medicines and supplies tendered by the employer. It requests the employee to inform the company at once if he desires to engage his own physician, at his own expense without compensation, or whether he wants the company physician to attend him without cost, as the law provides. A return card accompanies this notice.

8. *Assignment numbers.*—To avoid confusion and patients being treated out of turn, visitors at the dispensary of the Youngstown Sheet & Tube Co. receive immediately upon entrance numbered cards which indicate their order of treatment. In large dressing rooms a similar system may be used for the assignment of patients to various treatment units.

9. *Order to see doctor or nurse.*—Some cases are of such character that doctors may wish themselves to attend them. For this purpose a card which instructs the patient to see the doctor is used at the Youngstown Sheet & Tube Co. A similar card instructs the patient to see a nurse.

DISPENSARY SERVICE.

1. *Notice of first aid.*—In dispensaries which maintain no night service first-aid treatments are occasionally essential, and other circumstances as previously discussed sometimes make them necessary. In order to prevent subsequent neglect, a card indicating the date, the name of the patient, the reason for first aid, and what was done is made out by those who render first aid and is sent to the medical department. The card illustrated in Form 49 has been standardized by the National Conference Board of Industrial Physicians and is a part of the equipment of the first-aid jars recommended by that board. On the reverse of the card may be specified the supplies which are necessary to replenish the jars.

Form 49.—*Notice to medical department of first aid.*

FIRST-AID RECORD.

To be used when first aid is rendered employees.

Card must be sent promptly to Works' physician.

Name of injured...Check No.........Dept.........
Reason for first aid..
....
Employee sent back to work, or to dispensary, or home..................................
Remarks:...
....
Date...........................191..   Signed...
First aid....................Dept.

(Make request for material on reverse side of card.)

(2) *Surgical case record.*—This is the form that is used by physicians to record permanently the facts that pertain to the professional care of each injury. Although there seems to be a wide variance of opinion as to just what facts are worthy of entry upon this record, generally speaking they are those which bear upon the identity of the patient, the time, place, and cause of the injury, the nature of the injury, the details of the first treatment, the disposal of the patient, his condition on discharge, and the date of discharge. Diagrams upon which the location of injuries may be visualized are useful. There is a tendency to include the record of subsequent treatments in this form. This object is gained in a few instances by the use of a folder, an envelope, or a jacket (Form 50), upon the front of which is placed a summary of the redressings, the detailed memorandums being placed within.

Form 50.—*Jacket which contains the surgical case record; the face provides for a record of the treatments.*

Case No..........

Name..........

Date of accident.................... Returned to work........ Time lost..........

Date reported.............. Doctor.......... First report.......... Discharged..........

191	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
....																															
....																															
....																															

1. Dressing at office. Able to do light work.
2. Dressing at office. Able to do usual work.
3. Dressing at office. Unable to work.
4. Dressing at office. Refuses to work.
5. Dressing at residence.
6. Dressing at hospital.
7. Referred to specialist.
8. Operation in office.
9. Operation in hospital.
10. Examination.

Diagnosis..

....

....

....

....

The forms used for surgical case records are of a great variety of shapes and sizes. However, cards mostly are used, and the 4 by 6 inch and the 5 by 8 inch sizes are the most popular. Colors may serve to differentiate the sexes, the disability from the nondisability cases, or to set out certain features, such as infections, special types of treatment, or special injuries. A few examples of the most simple and satisfactory cards are illustrated in Forms 51, 52, 53, 54, and 55.

Form 51.—*Surgical case record, including redressing record; reverse side is shown in Form 52.*

Date..........................

Hour..........................

SURGICAL DRESSING RECORD—WOMEN.

Patient's name.............................. Age.................. Cl. No...............

Dept.............. Foreman.......................... Employed..............................

Date of injury.............. Hour.................... Nurse..............................

Diagnosis..

....

....

Dressing, month.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
....																															
....																															
....																															

Form 52.—*Reverse of Form 51.*

Patient's address..

Treatment..

....

Evidence of previous injury..

....

Prognosis..

Length of disability from work..

Disposition of patient..

Statement..

....

Form 53.—*A simplified type of surgical case records.*

Name.............................. Check No............ Bldg........... Dept....................

Male.............. Female..............

Case Record, General Electric Dispensary.

Lynn Works.

L.	Location of injury.	R.		Reason for visit.	Date.
......	Scalp	......	......	Nose bleed	
......	Face	......	......	Particle in eye	
......	Eye	......	......	Boil	
......	Ear	......	......	Digestive system	
......	Neck	......	......	Respiration	
......	Chest	......	......	Sprain	
......	Back	......	......	Circulation	
......	Abdomen	......	......	Infection	
......	Arm	......	......	Crushing	
......	Forearm	......	......	Fracture	
......	Wrist	......	......	Laceration	
......	Hand	......	......	Incised wound	
......	Finger	......	......	Abrasion	
......	Leg	......	......	Electric shock	
......	Knee	......	......	Burn	
......	Ankle	......	......	Punctured wound	
......	Foot	......	......	Contusion	
......	Toe	......	......	Dislocation	
......	Skin	......	......	General medical	
......		......	......	Physical examination	
......	Sent home	......	......	Returned to work	
......	Hospital	......	......	To be seen at home	
......	Specialist	......	......	To be brought in	
......		......	......	Disability	

Form 54.—*Surgical case record and redressing record combined.*

Erie Forge & Steel Co.—Medical Department.

Name.. Check No............ Address......................

Date of injury................................ Age.................. Department......................

Nature of injury..

....

Date discharged by doctor.............................. Date able to work..............................

Date.	Treatment and progress of case.

Form 55.—*Surgical case record.*

Larkin Co.

.... Dept. .... Check No.

Dispensary report.

Report No. ......

Name .... Address ....

Foreman .... Date injured .... Time ...... A. M. P. M. Date reported .... Time ...... A. M. P. M.

Nature of accident ....

....

First treatment.																					
Days reported to dispensary.	Attendant.	Tr. Iodine.	Unguentine.	Ichthyol.	Boraseptic.	Dry dressing.	Strapped.	Pt. dist. dressing.	Boric dropper.	Liniment.	Infection dev.	Working.	Not working.	Sent home.	Returned to work.	Light work.	Outside accident.				Remarks.

Patient discharged. Result of treatment.

Date ...., 19...

....
Signature of doctor.

3. *Redressing record.*—This is a form which indicates the date of dressing, the treatment used, special notes as to progress, and the name of the attendant. It may be of advantage to show also the date the patient is ordered to report (Form 56). In some dispensaries the engagement card or the dispensary pass is used also as a redressing record. For the most part the redressing record is included in the surgical case report (Form 54).

Form 56.—*Redressing record.*

Date .... Name .... Check No. ....

Diagnosis of injury ....

....

Date ordered to report.	Date reported for dressing.	Treatment.	Doctor.	Condition of injury.

NOTE.—Industrial physicians seem to have much difficulty in keeping track of their patients, some ceasing to appear for treatments before they are fully recovered. To prevent this, the doctor of the National Malleable Casting Co., Toledo, Ohio, has seven compartments in his clerk's desk, one for each day of the week and sufficiently large to accommodate the redressing cards of the patients expected on each day. At the end of the day the patients who have not appeared are indicated by the cards remaining in the box for that day.

4. *Redressing memorandum.*—Dressings are usually recorded directly upon the redressing record. However, in large dispensaries it may be deemed better for the attendants to make memorandums of treatments (Form 57) which clerks may later transfer to permanent records. Variously colored memorandums may be used to indicate new cases, surgical or medical, and retreatments, surgical or medicinal.

FORM 57.—*Redressing or treatment memorandum.*

The Yale & Towne Manufacturing Co.

DISPENSARY.

Clock No. . . . .
Diagnosis. . . . .
Treatment. . . . .
. . . .

Dr. V. A. PAUL.

5. *Record of operation.*—Inasmuch as operations are ordinarily done in hospitals, the records of the procedures are kept there. When operations are performed in industrial dispensaries, the records are either kept on the standard hospital form or notes are made on the surgical case record or redressing record. When patients are referred to surgeons or hospitals it is desirable that reports be made by them giving in each instance date of the operation, essential details, result and date of discharge. This report becomes a part of the case record.

6. *Report of specialists.*—All cases other than those treated in the dispensary should be reported in order that the company physician may have knowledge of their progress and accurate information to become a part of his record. These reports should contain the name of the patient, date of reference and discharge, diagnosis, and result.

7. *Medical case record.*—Few industrial medical departments keep extensive records of medical cases. The usual custom is to enter individual treatments on sheets which summarize daily the medical work done or which summarize the workman's sickness record. (Form 58.)

FORM 58.—*Medical case record, more properly a register of illnesses.*

Name	Illness record.		Foreman.
Address	Dept. No.	Check No.	

Date.	Complaint.	Treatment.

As with the surgical case record, the forms used for the recording of medical cases are various, though usually quite simple, and provide spaces for date of treatment, identification of patient, diagnosis and treatment. That which is used by the medical department of the Pullman Co. is very much like an ordinary hospital medical case record. The form used at the Norton Co. (Form 59) is offered as an example of a type that is capable of reducing clerical work to the minimum. Spaces may be provided on the medical case record for retreatments.

FORM 59.—*A medical case record that reduces clerical effort.*

Norton Company, Worcester, Mass.

SICKNESS SLIP.

Health and Sanitation Department.

Time treated

Name No Dept

Address Age M. S. W. Date

Duration, D. W. M.	Phys. Exam.	Diagnosis.		Treat.
Resp.	Resp.	Resp.		Ac. comp.
Running nose	Coryza	Coryza		Bismuth subnitr.
Cough	Spts. on tons	Tonsilitis		Brown mixture.
Chills	Crepitant r	Chr. tonsilitis		Bronchitis tabs.
Expectoration		Ac. bronch		C. C. & C. R.
Sore throat	Sub. crep. r	Subac. bronch		Castor oil.
Feverish	Granular Phar	Pharyngitis		Coltsfoot comp.
Hoarseness		Dry pleurisy		Chloroform & cloves.
Night sweats		Influenza		Capsolin or liniment.
Abd.	Abd	Abd.		Dover's pow. gr.
Nausea	Distended	Gastritis		Local anodyne.
Dizziness	Tympan	Enteritis		Paint. I. & G.
Vomiting	Tender ap	Gastro ent		R. & I.
Diarrhoea	Mass in cæcum	Constipation		Seiler's garg.
Constip	Rash	Appendx		Seidlitz pulv.
Abd. pain				Strapped.
Gen.	Gen.	Gen.		Sputum box.
Toothache	Cavity	Caries tooth		Sent home.
Earache	Impacted c	Otitis media		Silverol.
Conj		Chr. rheum		Therap. lamp.
Nose bleed	Ulcer of sep	Nose bleed		Tr. ginger.
Malaise	T	Malaise		Wash ears.
Gen. pains	P	Myalgia		Massage.
Pain {Rt. chest Lt. chest		Headache		
Headache				

Remarks

8. *Re-treatment record.*—This is similar to the re-dressing record. In fact, the same card serves both purposes in some places.

9. *Occupational-disease report.*—This is the standard form used by many boards of health. Incidentally, industrial physicians should be made to realize more fully the value of reporting occupational diseases.

10. *Case record of tubercular employees.*—A record form is provided in the medical department of the Ford Motor Co. (Form 60) for tubercular employees. A card for noting home conditions (Form 61) supplements the case record. The International Harvester Co. also has a special form for recording the history of tubercular employees, and in it spaces are furnished for the family history.

Form 60.—*Case record of tubercular employee. Chest findings are on reverse of card.*

CASE RECORD OF TUBERCULAR EMPLOYEE.

Ford Motor Co., Medical Department, Highland Park.

Name....................No. ....Date........ Age......Social condition..........
Date hired ....Present occupation ....
....
Previous occupation ....How long in Detroit..................
....
Birthplace ....How long in U. S. ....Birthplace of father........
Birthplace of mother ....
Family history ....
....
Previous history ....
....
Length of present illness ....Previous diagnosis ....
....
General examination ....
Appearance ....Hemoglobin percentage...............
Structure and nutrition......................Dyspnea...................................
Skin and subcutaneous tissues................Throat.....................................
Glands...Cough ....
Chest capacity ....Chills ....
Sputum ....Hemoptysis ....
Sleep ....

Form 61.—*Home record of tubercular employee.*

HOME RECORD OF TUBERCULAR EMPLOYEE.

Ford Motor Co., Highland Park, Mich.

Name ....No. ....Date..........................
Street ....No. ....Location ....
....M. S. W. ....
....Home ....
No. of rooms ....Ventilation of homes ....
Location of sleeping rooms ....
Ventilation of sleeping rooms ....
Are others exposed to infections?..

....
Facilities for preparation of food ....
....
Nature of nourishment...
Changes of living conditions advised—Date ....
Note ....
....

11. *Laboratory report.*—The general custom is to record laboratory findings directly upon case records and physical examination blanks. In a few places a special form is used, however. In it may be combined reports on the work most frequently required of laboratories (Form 62).

FORM 62.—*Laboratory report.*

PHYSICAL EXAMINATION DIVISION—LABORATORY ANALYSIS.

Name ....Dept. No. ....
Sample taken ....a. m. p. m.   Examined by ....a. m. p. m.

URINE.

Color ....
Specific gr. ....
Reaction..............%
Albumen..............%
Sugar ....%
Urea ....%
Sediment ....
Phosphates ....
Oxylates.................
Diazo ....

Indican..................
Lead ....
Bile ....
Blood...................
Pus.....................
Casts Hyal. ....
Casts Gran. ....
Casts Epith. ....
Uric acid ....
Chlorides ....

SPUTUM.

Elastic mat'l ....
Spirals ....
Crystals....................
Bacteria....................

BLOOD.

Date.	Red.	White.	Hemo.
......	......	......	......
......	......	......	......
......	......	......	......

....

12. *X-ray report.*—The results of X-ray examinations are also usually made a part of case records. The card used by the Youngstown Sheet & Tube Co. (Form 63) is submitted as a sample of the separate form.

FORM 63.—*X-ray report.*

THE YOUNGSTOWN SHEET & TUBE CO.

Roentgenological report.

Name.......................................   File No.......................
Dressings..................................   Report No.....................
Region examined............................   Check No......................
Remarks (radiographed-fluoroscopic)..
....
....
....
Date.........................191..
Roentgenologist.....................

13. *Master card.*—A chronological record of each employee's injury and sickness history seems to be desirable. To obtain it the individual's case records may be filed in a folder, or envelope,

upon the front of which are printed spaces for the employee's name and other identifying data and a summary of his dispensary history; or a master card (Form 64) may be used instead, serving also the purpose of an index card.

FORM 64.—*Master card.*

Name.................................... No......

Address..............................

Age.	Married. Single.	No. of children.	Occupation.	Dept.	Nationality.

ACCIDENTS.

Accident No.	Date.	Nature of injury.	Date of leaving work.	Date of return to work.	Benefits allowed.	Remarks.

14. *Diagnosis and name-index cards.*—These are 3 by 5 inch cards of the usual index variety and are used only when case records are filed by number or when physicians desire to make special studies of injuries or diseases.

15. *Recommendations to patients.*—In the dental service of industry employees who need special treatments are given cards (Form 65) recommending them to visit their own dentists. There seems to be no reason why similar cards might not be used in medical service. As it is prescription blanks are used when written recommendations are made. A special card was found in one establishment for referring employees to the dental side, with the assertion that a general examination of the teeth is needed.

FORM 65.—*Card for referring dental patient to his own dentist.*

SEARS, ROEBUCK AND CO.

Dentists' Office.

M...........................

Your mouth has been examined and you are advised to present this card to your dentist. The chart on the reverse side shows the teeth needing attention. You are requested to notify this office as soon as you have had this work done and return this card.

GEORGE J. KRAKOW, D. D. S.,
Dental Director.

Examination made by...........................D. D. S.

(Over)

16. *Residence calls.*—A special form is used by the medical department of the Ford Motor Co. when physicians are required to call on patients in their homes (Form 66). In it are combined a request for attention in the home and a record of the calls made.

FORM 66.—*Record of residence calls.*

Doctor should call on
Date ...., 191..
Name ....
Badge ....
Address ....
Nature of injury ....
The notice made out by ....
Record of calls made.

By Doctor.	Date.	Calls may be discontinued because—

Date ...... 191.. Dr. ....
Use reverse side for recording prognosis and remarks.
Return this card to legal medical department when patient is discharged.

17. *Stock inventory.*—To know at all times the amount of the supplies on hand is of material advantage. The card illustrated in Form 67 is in use at the dispensary of the William Cramp & Sons Ship & Engine Building Co. Each time supplies are moved from the stock room, deductions are made and the balance noted. Likewise when supplies are purchased additions are made. In this manner the amount on hand is constantly evident. One card, of course, is made out for each kind of supplies.

FORM 67.—*Form for keeping a perpetual inventory of stock.*

Received.				Dispensed.						Requisition No.
Date.	Ordered.	Received.	Bal. due.	Date.	Quantity.	Balance.	Date.	Quantity.	Balance.	

REPORTS ON DISPENSARY SERVICE.

1. *Daily register.*—Most of the cases industrial medical departments are called upon to treat are of a minor character and require but few visits. It is not customary to record in detail these cases. They are entered as they come in what might be called a daily register (Form 68), one line to a treatment. These registers are ruled vertically and have headings to indicate the information desired. The simplest of these call for name, identifying number and remarks, the last of which is expected to include diagnosis, treatment and special information. Others specify the time of treatment. A rather complete register calls for information as follows: Name, check number, department, injury or illness, how serious, physician, taken to hospital, and remarks. A register in use at the Willard Storage Battery Co. indicates that the following information is wished: Name, num-

ber, weight, complaint, physical examination, treatment, appetite, bowels, vomiting, colic, anemia, lead line, and blood. This register is used as a check against lead poisoning.

Form 68.—*Example of a daily register of cases.*

C. R. Wilson Body Co.

Daily medical report of injured and dressings.

Date ....

Clock No.	Name.	Nature of injury.	Time.	Memo.

Signed ....

The objection to the register is that the information it contains relative to individual patients is not easily available, the only means of finding it being in the dates of treatments. From it, however, summaries may be secured according to the headings used, or, if desired, entries may be transferred to patient's case or treatment records which serve to assemble the facts. The register is comparable to the daybook or journal of the bookkeeper; it is a book of original entry. As used in industrial medical service it appears to have become merely a list of treatments.

2. *Record of work.*—The daily record is usually a summary of the daily work put up in such form as can readily be transferred to monthly and annual report forms. The information gathered in the daily record depends entirely upon the facts the physician wishes to bring out. He may wish to show merely the volume of work, such as the numbers of new injuries, redressings, new medical cases, retreatments, examinations of applicants for employment, examinations of employees, etc. He may desire to show the variety of cases, as, for example, contusions, lacerations, abrasions, puncture wounds, etc. He may feel that the part of the body injured is the important feature—head, neck, trunk, etc., or, in his opinion, the findings from the physical examinations are to be stressed. Any and all of these appear among the headings under which the physicians collect the data for their daily records.

Form 69.—*Form that may be used for tabulating daily work.*

Erie Forge & Steel Co.

Daily record medical department.

Date................ 191—

1. Contusion					13. Sprains				
2. Lacerations					14. Infected wounds				
3. Abrasions					15. House visits, surgical				
4. Punctured wounds					16. Hospital visits				
5. Foreign body in eye					17. Physical examinations				
6. Inflammation of eye					18. Medical cases at office				
7. Burns					19. Medical cases at home				
8. Fractures					20. Sent to St. Vincent's Hospital				
9. Dislocations									
10. Hernia					21. Referred to specialists				
11. Minor operations					22. Miscellaneous				
12. Major operations					23. Dressings				

The main consideration in the daily record is that the form shall be so arranged as to facilitate the preparation of the monthly and annual reports. The blank record appearing in Form 69 is recommended as being of use in the assembling of the totals. As used at the Erie Forge & Steel Co., the small spaces are for patients' check numbers, but they may be used for setting out the counts in blocks of five. The totals thus acquired may be transferred to a form that permits the accumulation of the daily totals line upon line (Form 70) until the month's record is complete. In like manner, the annual record may be built up month by month; also the perpetual record year after year. And, by the way, the use of vertical columns for like data, rather than horizontal, makes for easier reading and better comparisons.

FORM 70.—*Form that may be used for accumulating daily, monthly, and annual reports.*

DAILY RECORD OF EXAMINATIONS.

Medical Department, Eastman Kodak Co.

Month......

Day.	Applicants.		Rejections.		Present employees.		Grossly defective.		Vaccinations.	Reexaminations.		Teeth.						
	M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	Perfect.	Good.	Fair.	Poor.	Bad.	Absent.	Plates.
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
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21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		
Total																		

The advantages of this system are (*a*) its simplicity, (*b*) the ease with which the compilations can be made, (*c*) the cumulative feature, and (*d*) the opportunities it offers for comparisons from day to day, month to month, and year to year.

3. *Reports of work.*—The object of reports is to convey important data to interested officials and others. Reports should be brief, easy to read, and contain only such data as may be relevant. Whether they are to be submitted daily, monthly, or annually, the same form may be used (Form 71).

FORM 71.—*Report of work.*

CARNEGIE STEEL COMPANY.

Surgeon's report for.........., 191..

To Chief Surgeon:

	No. of cases.		No. of cases.		No. of cases.
First attention at works		Dressing at works		Admitted to hospital	
First attention at hospital		Dressing at hospital		Discharged from hospital	
First attention at office		Dressing at office		Remaining in hospital	
Home visits		Dressing at home		Remaining in home	
Total accidents		Total dressings		Deaths	
Open wounds		Infected wounds		Referred to oculist	

Remarks:

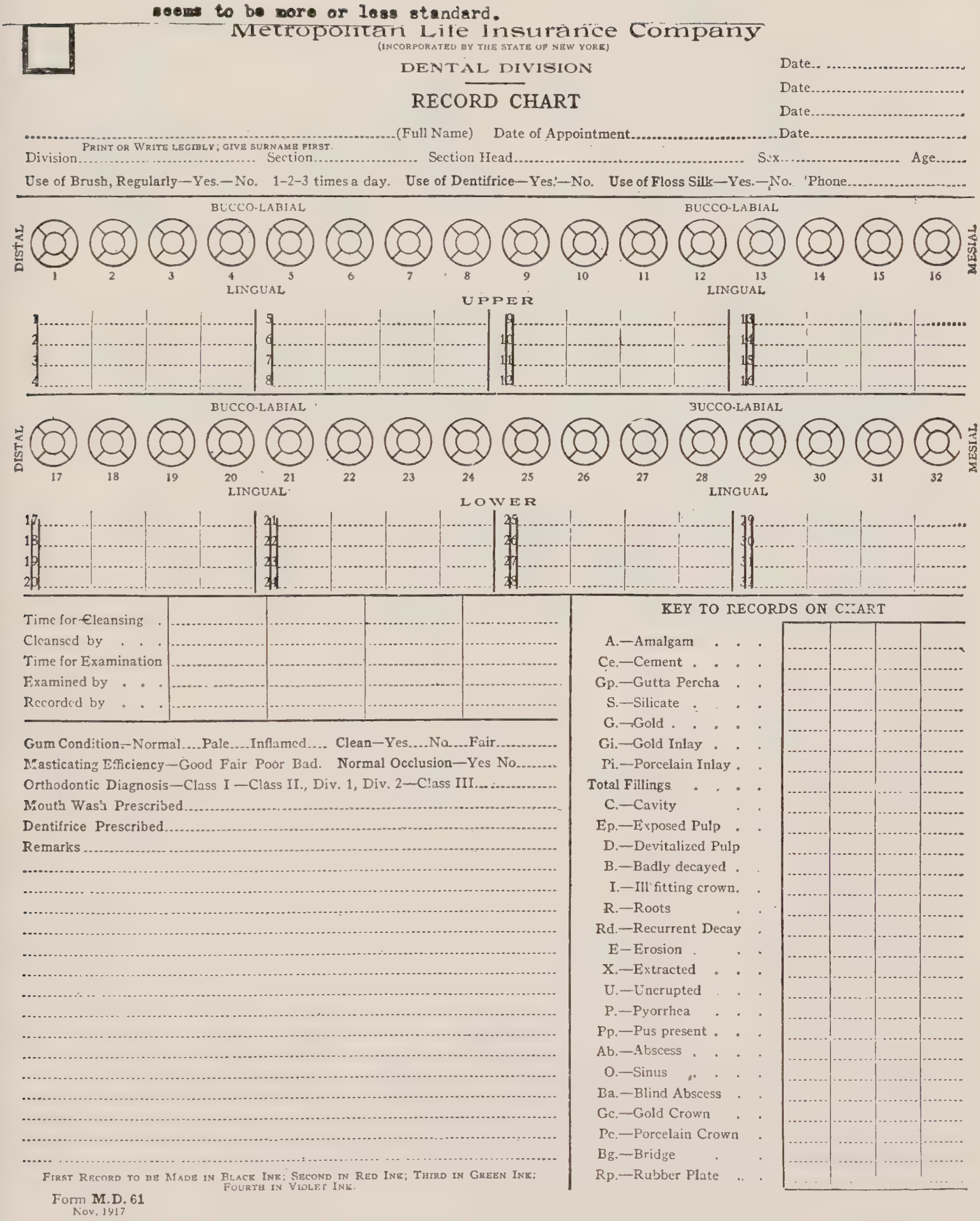
CASES TREATED.

	No. of cases.		No. of cases.	Not classified.	No. of cases.
Abrasions		Foreign body in eye			
Asphyxiated		Foreign body			
Burns, first and second degree.		Heat prostration			
Burns, third degree		Shock			
Burns, of eye		Sprains			
Contusions		Sunstroke			
Concussion		Wounds (lacerated)			
Cramps		Wounds (incised)			
Dislocations		Wounds (punctured)			
Fractures (simple)		Wounds (infected)			
Fractures (compound)					
		Total cases			

Remarks:

Company Surgeon..............................

Complicated statistical reports of a technical character are of no interest to industrial officials; such reports are solely for the physicians themselves, and their main purpose is in the pursuit of scientific studies. Form 72 is well adapted to a statistical study of injuries and is deservedly popular. Seemingly the best way to study illnesses is to list them under headings which indicate the parts of the body involved. Under the eye, for example, would be eye strain, conjunctivitis, sty, ecchymosis, ulcer of cornea, etc.



seems to be more or less standard.

Metropolitan Life Insurance Company
(INCORPORATED BY THE STATE OF NEW YORK)

DENTAL DIVISION

RECORD CHART

Date..................................
Date..................................
Date..................................

....(Full Name) Date of Appointment..............................Date..................................
PRINT OR WRITE LEGIBLY; GIVE SURNAME FIRST.
Division...................................... Section.......................... Section Head.. Sex.......................... Age.......
Use of Brush, Regularly—Yes.—No. 1–2–3 times a day. Use of Dentifrice—Yes.—No. Use of Floss Silk—Yes.—No. 'Phone..........................

Time for Cleansing				
Cleansed by				
Time for Examination				
Examined by				
Recorded by				

Gum Condition—Normal....Pale....Inflamed.... Clean—Yes....No....Fair..............
Masticating Efficiency—Good Fair Poor Bad. Normal Occlusion—Yes No.........
Orthodontic Diagnosis—Class I —Class II., Div. 1, Div. 2—Class III..................
Mouth Wash Prescribed..
Dentifrice Prescribed..
Remarks...

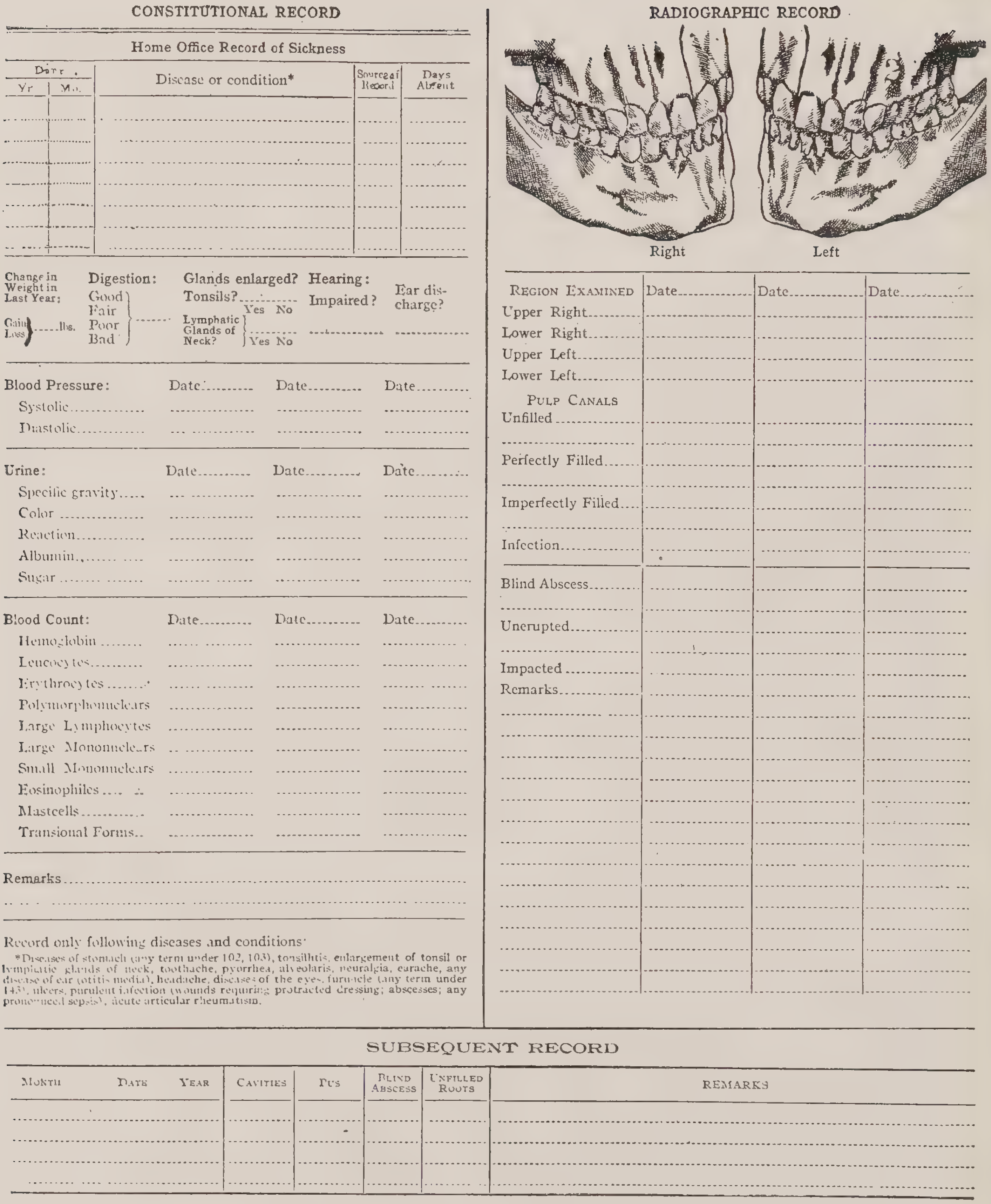
FIRST RECORD TO BE MADE IN BLACK INK; SECOND IN RED INK; THIRD IN GREEN INK; FOURTH IN VIOLET INK.

Form M.D. 61
Nov. 1917

KEY TO RECORDS ON CHART

A.—Amalgam				
Ce.—Cement				
Gp.—Gutta Percha				
S.—Silicate				
G.—Gold				
Gi.—Gold Inlay				
Pi.—Porcelain Inlay				
Total Fillings				
C.—Cavity				
Ep.—Exposed Pulp				
D.—Devitalized Pulp				
B.—Badly decayed				
I.—Ill fitting crown.				
R.—Roots				
Rd.—Recurrent Decay				
E—Erosion				
X.—Extracted				
U.—Unerupted				
P.—Pyorrhea				
Pp.—Pus present				
Ab.—Abscess				
O.—Sinus				
Ba.—Blind Abscess				
Gc.—Gold Crown				
Pc.—Porcelain Crown				
Bg.—Bridge				
Rp.—Rubber Plate				

Form 73.—A card for recording dental examinations which seems to be more or less standard.



CONSTITUTIONAL RECORD

Home Office Record of Sickness

Date		Disease or condition*	Source of Record	Days Absent
Yr	Mo.			

Change in Weight in Last Year: Gain / Loss ......lbs.

Digestion: Good / Fair / Poor / Bad ....

Glands enlarged? Tonsils? .... Yes No

Lymphatic Glands of Neck? .... Yes No

Hearing: Impaired? ....

Ear discharge? ....

Blood Pressure:	Date........	Date........	Date........
Systolic........			
Diastolic........			

Urine:	Date........	Date........	Date........
Specific gravity........			
Color........			
Reaction........			
Albumin........			
Sugar........			

Blood Count:	Date........	Date........	Date........
Hemoglobin........			
Leucocytes........			
Erythrocytes........			
Polymorphonuclears			
Large Lymphocytes			
Large Mononuclears			
Small Mononuclears			
Eosinophiles........			
Mastcells........			
Transional Forms..			

Remarks..

Record only following diseases and conditions:

*Diseases of stomach (any term under 102, 103), tonsillitis, enlargement of tonsil or lymphatic glands of neck, toothache, pyorrhea, alveolaris, neuralgia, earache, any disease of ear (otitis media), headache, diseases of the eyes, furuncle (any term under 143), ulcers, purulent infection (wounds requiring protracted dressing; abscesses; any pronounced sepsis), acute articular rheumatism.

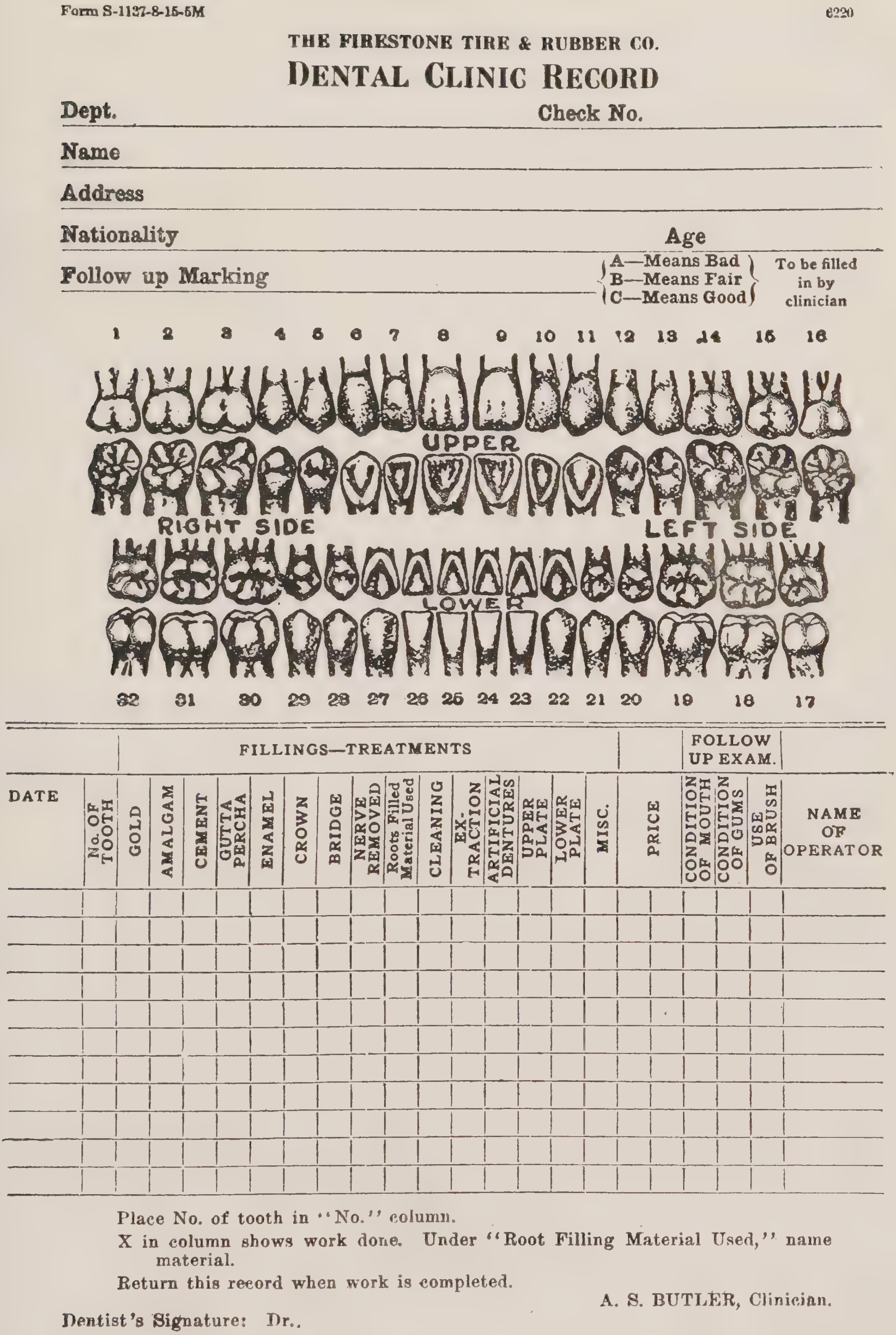
RADIOGRAPHIC RECORD

Region Examined	Date........	Date........	Date........
Upper Right........			
Lower Right........			
Upper Left........			
Lower Left........			
Pulp Canals Unfilled........			
Perfectly Filled........			
Imperfectly Filled........			
Infection........			
Blind Abscess........			
Unerupted........			
Impacted........			
Remarks........			

SUBSEQUENT RECORD

Month	Date	Year	Cavities	Pus	Blind Abscess	Unfilled Roots	Remarks

Form 74.—Reverse of card shown in Form 73.



Form S-1137-8-15-5M 6220

THE FIRESTONE TIRE & RUBBER CO.

DENTAL CLINIC RECORD

Dept. **Check No.**

Name

Address

Nationality **Age**

Follow up Marking A—Means Bad, B—Means Fair, C—Means Good — To be filled in by clinician

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
UPPER
RIGHT SIDE
LEFT SIDE
LOWER
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

		FILLINGS—TREATMENTS																FOLLOW UP EXAM.			
DATE	No. OF TOOTH	GOLD	AMALGAM	CEMENT	GUTTA PERCHA	ENAMEL	CROWN	BRIDGE	NERVE REMOVED	Roots Filled Material Used	CLEANING	EX-TRACTION	ARTIFICIAL DENTURES	UPPER PLATE	LOWER PLATE	MISC.	PRICE	CONDITION OF MOUTH	CONDITION OF GUMS	USE OF BRUSH	NAME OF OPERATOR

Place No. of tooth in "No." column.

X in column shows work done. Under "Root Filling Material Used," name material.

Return this record when work is completed.

A. S. BUTLER, Clinician.

Dentist's Signature: Dr.

Form 75.—A simplified form of recording dental examination.

FORM 72.—*Statistical report of injuries.*

SURGICAL CASES TREATED AT........WORKS.

Month ending.............191..
.......................M. D.

Injuries.	Eye.	Ear.	Nose.	Face.	Neck.	Scalp.	Arm.	Elbow.	Wrist.	Hand.	Finger.	Leg.	Knee.	Ankle.	Foot.	Toe.	Abd.	Chest.	Rib.	Back.	Hip.	Total.
Lacerated																						
Abrased																						
Contused																						
Punctured																						
Incised																						
Burns																						
Sprains																						
Strains																						
Dislocations																						
Fracture																						
Infected																						
Foreign body																						
Amputations																						
Total																						

DENTAL SERVICE.

The dispensary pass, engagement card, notice to foremen of engagements, record and report forms; in fact, all forms used in general service may be used or adapted with appropriate changes to dental service. There is one form, however, that is peculiar to dental work.

1. *Dental case record.*—The form in use at the dental clinic of the Metropolitan Life Insurance Co. (Forms 73 and 74) is widely copied and seems to be accepted more or less as standard. A less complicated form is illustrated in Forms 75 and 76.

FORM 76.—*Reverse of card shown in Form 77.*

TO BE FILLED IN BY CLINICIAN.

History of case..
Condition of throat....................................
Improved since last examination?.......................
Advice given in first examination......................
Case referred to Dr....................................
Does employee show indication of following advice?.....
Further remarks..
Time lost by employee previous to this date while in the employ of the company on account of teeth...................................
Desire employee to return for further examination......
Time........................ Date.......................
Examination made by....................................
Dr..............................

FACTORY INSPECTIONS.

1. *Record of inspection.*—This is a description of conditions as found (Form 77). It gives the date of inspection and the department, in addition to a description of the conditions found. Special forms may be prepared for special investigations (Form 78).

FORM 77.—*Record of factory inspection.*

Report to sociological department any unsafe or insanitary condition.

Department No. ...... Date..............191..

Remarks..

....

....

Signed..............................

FORM 78.—*Report on special factory inspection.*

TOILET FACILITIES—MEN.

Building.	Floor.	Location.	Maximum number men per shift.	Number of toilets.	Type.	Number of urinals.	Type.	Remarks.
....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....

2. *Recommendation.*—This is a form used in transmitting to the foreman or other official a description of an unhealthful condition, with a request and recommendation for its correction.

3. *Inspector's report.*—This is a list of unhealthful conditions, and it gives their locations, dates found, and recommendations.

VISITING-NURSE SERVICE.

1. *Request for nursing aid.*—This is a form by means of which a tracer (Form 79), truancy officer, or a foreman may notify the visiting nurse of a sick absentee. On the reverse of the card illustrated is the nurse's report. It gives date and hour of call, how long employed, statement of facts as discovered, and a record of subsequent visits.

FORM 79.—*Request for visiting-nurse service.*

AMERICAN STEEL & WIRE CO.

.... Works.

Tracer's report of sickness. Date..........

Name.......................... Brass check No.... Department...............

Residence...

When taken sick..

Attending physician..................... Address.................................

Nature of sickness...

....

Statement of facts as discovered..

Remarks...

Referred to visiting nurse.................. Signed...............................

By.................... Date.................... Hour...............................

..................................Tracer.

2. *Report of visit.*—According to the forms used in reporting nursing visits on sick absentees, the visits may be chiefly for the purpose of getting information (Form 80) for the use of the medical department or a relief association, or they may be principally for the purpose of assisting in the care of the case (Form 81).

Form 80.—*Informative report on nurse's visit to sick absentee.*

N. C. R. VISITING NURSE'S REPORT.

Acute ☐
Chronic ☐

Name.. Date................
Dept.................................. Address................................
Ailment..
....
Probable period of disability.......................... Physician...............
Member of Relief Association........................ Married..................
Single...................
Home conditions..
.... Children.................................
Patient's statement..
....
Nurse's statement..
....
Nature of treatment..
Signed....................................

Form 81.—*Report of nursing visit on care of patient.*

Name.............................. Address......................... File No. ....

	First case.	Second case.	Third case.
Diagnosis			
Complications			
Date of first visit			
Date of last visit			
Total visits			
Condition on discharge			
Dismissed to			
Physician			

VISITS MADE.

Date.	Patient's condition.	Physician's orders.	Services rendered.

(Over.)

The results of special investigations may be recorded upon very simple forms, with spaces to indicate the identity of the absentee, but no more, the rest of the form being blank to allow the nurse to write what she deems important. Information that is of interest to employing departments or foremen, such as the probable period of absence, may be passed on to them by a form similar to that in Form 82.

FORM 82.—*Report of visiting nurse to foreman.*

N. C. R. VISITING-NURSE'S REPORT

To the foreman of ....Department

..................................191..

Mr.................................., reported absent..........................

because of sickness, received a call from the nurse to-day.

Ailment...

Physician...

Probable period of disability...

Nurse's statement...

....

..............................,

Visiting Nurse.

3. *Report of work.*—The principles which apply to the reporting of general industrial medical service apply here. The report should be brief and show only such information as may be of interest. It is desirable that the form be so arranged as to further the preparation of the monthly and annual reports. As fairly representative of the information generally sought, the weekly report (Form 83) and the monthly report (Form 84) used in nursing service of the Pickands, Mather & Co., are offered.

FORM 83.—*Weekly report of visiting nurse.*

VISITING NURSE WEEKLY REPORT.

............District For week ending................, 191...

Nature of visit.	S	M	T	W	T	F	S	Total.	Locations visited.	New calls–Nationality.
Nursing visits										American English
Casual										German Finnish
Child welfare										French Polish
Prenatal										Slovaks Irish
Nursing instruction										Italian Norwegian
Interviews										Swedish Bulgarian
Investigations										Austrian
Total										

Plans and suggestions..

....

Visiting Nurse.

Form 84.—*Monthly report of visiting nurse.*

VISITING NURSE.

Monthly Report.

.... District. For month of ...., 191..

Patients continued from last month.. ......
New patients.. ......

Total patients cared for during month.. ......
Number needing no further care.. ......
Number transferred to hospital or other care................................... ......
Number died... ......

Patients still being cared for.. ......

Summary of Visits.

Nursing visits.. ......
Casual... ......
Child welfare... ......
Prenatal... ......
Nursing instruction.. ......
Interviews... ......
Club meetings... ......
New families visited... ......

Classification of New Patients for Month.

Number of adults .... Male........ .... Female........ ....
Number of children under 15... .... Male........ .... Female........ ....

Nationality of New Patients for Month.

American.......... ....
English............ ....
German............ ....
Finnish............ ....
French............. ....
Polish............. ....
Slovaks............ ....
Irish.............. ....
Italian............ ....
Norwegian.......... ....
Swedish............ ....
Bulgarian.......... ....
Austrian........... ....
....
....

Diseases of New Patients for Month.

Appendicitis....... ....
Bowel trouble....... ....
Bronchitis.......... ....
Burns............... ....
Catarrhal fever...... ....
Cold................ ....
Colic............... ....
Eczema.............. ....
Enteritis........... ....
Epileptic........... ....
Gastritis........... ....
General debility.... ....
Heart trouble....... ....
Infants, care of...... ....
Infections.......... ....
Injury.............. ....
Kidney trouble..... ....
Locomotor ataxia... ....
Malnutrition....... ....
Mastoiditis........ ....
Nephritis.......... ....
Neuralgia.......... ....
Obstetrical........ ....
Pleurisy........... ....
Pneumonia.......... ....
Post operative..... ....
Pul. tuberculosis... ....
Quinsy............. ....
Rheumatism......... ....
Rupture............ ....
Senility........... ....
Sore eyes.......... ....
Sprains............ ....
Stomach trouble.... ....
Tonsilitis......... ....
Typhoid fever...... ....
Unclassified....... ....
Undiagnosed........ ....
Var. ulcer......... ....

....
Visiting Nurse.

EMPLOYMENT SERVICE.

1. *Notice of disability.*—It is customary for medical departments to notify foremen and employment departments of disabilities incurred by employees in connection with accidents and illnesses, in order that proper arrangements may be made for carrying on the work. The form (Form 85) is dated, addressed to the foreman or other official who is interested, conveys the information that the employee has been treated for a certain injury or ailment, and gives an estimate of the disability. It may be deemed advisable for this form to be filled out in triplicate, copies to be sent to the foreman and employment department.

FORM 85.—*Notice of disability.*

THE BUCKEYE STEEL CASTINGS CO.

Notification of Accident to Employee.

Date ...., 19..

.... Foreman. .... department and to the employment bureau:

You are notified that No. ....

....

Name.

Has this day reported at .... m. to the plant hospital for attention.

Nature of injury or ailment..

Probable length of disability..

....

Hospital Attendant.

(This copy to be sent to foreman.)

That which is used by the Willard Storage Battery Co. contains an acknowledgment by the foreman to the effect that he has received the notice. The form used by the Yale & Towne Manufacturing Co. informs the foreman that the incapacitated employee must not be allowed to work until he receives and presents to the foreman a notice of recovery signed by the doctor or a nurse. The notice of disability differs from the certificate of disability by means of which physicians notify underwriters and compensation departments of the beginning of compensation periods, although in cases that are clearly compensable at the time the first treatment is given the notice of disability may serve in the dual capacity.

2. *Notice of serious injury.*—A notice similar to that which has just been discussed, but furnishing also space in which can be estimated the permanent effects of the injury, may be seen in a few establishments.

3. *Notice of termination of disability.*—Like the notice of disability, this form is addressed to foreman and employment department, either or both, and sets forth the information that the employee is, of des-

ignated date, able to take up light work or resume his regular duties. In some places two varieties of this form are in use, one for light work and one for regular work, the two being different in color. The notice of termination of disability may be also a return to work pass and a certificate to the compensation department, evidencing the termination of incapacity. On some of the cards are spaces in which the foreman indicates that the employee has returned to work (Form 86).

FORM 86.—*Notice of termination of disability.*

Foreman will return this card to Accident Department, when man resumes work.

THE YOUNGSTOWN SHEET & TUBE CO.

Date................ Report. No.......

The bearer...Check No...........

who was injured in your department has now recovered sufficiently so that he can perform regular work.

....

Company Surgeon.

Mr................................

In view of above certificate we ask that you place this man at regular work as soon as possible.

....

Claim Agent.

This man commenced work as..on ....191..

Here state work given him.

....

Foreman.

(Over)

4. *Report of examination after injury or illness.*—When employees are examined upon returning from absence because of injury or illness, it is customary for physicians to report their acceptance to the foreman on a blank (Form 87) prepared for that purpose.

FORM 87.—*Report on examination after absence from injury or illness.*

....	Medical Department—Eastman Kodak Company.
Date..............	Rochester, N. Y.,................
Name	Eastman Kodak Co.
....	
Absent.............	Gentlemen: ....of............Department,
Because of	who has been absent from work for........weeks because of
....	....
....	has been examined by me to-day and I find $\left\{{\text{his} \atop \text{her}}\right\}$ physical condition justifies the resumption of $\left\{{\text{his} \atop \text{her}}\right\}$ duties.
....	..............................M. D.

5. *Record of transfer.*—In case the physician recommends the transfer of an employee to another kind of work or another department, it is well that a record be retained showing the recommendation as made, the reason for making it, and the date.

6. *Notice of transfer.*—This is a notice which the physician sends to the foreman or employment department when he recommends the transfer of an employee. It indicates the department or kind of work to which the employee has been transferred, the date of transfer, and the reason for making it.

7. *Notice of examination.*—This is simply an acknowledgment by the doctor, indicating that an applicant for employment has been examined. In it are spaces for the date, name of applicant, and the signature of the doctor. The physical rating may (Form 88) or may not be included, and if included it may be coded.

FORM 88.—*Notice of examination having been made on applicant for employment.*

MEDICAL DEPARTMENT—EASTMAN KODAK COMPANY.

Rochester, N. Y.,.... ....
Eastman Kodak Company.
Gentlemen:.........................has reported to me for physical examination.
Medical rating is............
Yours truly,
..................................M. D.

A special blank is sometimes furnished to indicate the acceptance of an applicant subject to certain conditions (Form 89). The blank illustrated is made out in triplicate; one is given to the employee, one goes to the foreman or department head, and the third is retained by the medical department. If the employee fails to comply with the conditions, and is not granted an extension of time, a notice of his failure to pass the final examination, together with a recommendation for his dismissal (Form 90), is sent to his foreman or department head.

FORM 89.—*Notice to foreman of the conditional acceptance of an employee.*

EMPLOYEE ACCEPTED CONDITIONALLY.

Date................
Mr...................., department..........
....................has been examined to-day and accepted conditionally after agreeing to...
by........unless additional time is allowed, when notification will be sent to you (see G. M. I. 33. 101).
....
Chief Surgeon.
This coupon to be sent to chief of department to which applicant is assigned (see G. M. I. 33. 101).

FORM 90.—*Notice to foreman of failure of applicant for employment to pass the physical examination.*

NOTICE OF EMPLOYEE'S FAILURE TO PASS PHYSICAL EXAMINATION.

Date...............
Mr...................., department..........
M...................., who was accepted conditionally on............has failed to pass the final physical examination and should be dismissed.
....
Chief Surgeon.
This coupon to be sent to department chief (see G. M. I. 33. 101).

8. *Notice to physician when employment is terminated.*—In order that records of physical examinations, and in fact all information which medical departments keep concerning employees, may be kept active and of the greatest degree of usefulness it would seem advisable for physicians to arrange with employment departments or foremen to notify them when workmen terminate employment. A simple notice to that effect would be sufficient and would enable physicians promptly to transfer the records to inactive files.

ACCIDENT PREVENTION AND INJURY COMPENSATION.

Medical departments, strictly speaking, act only as sources of information for safety and compensation departments and only those forms which serve to convey the information desired of them by those departments will be considered.

1. *Request for foreman's report.*—The foreman is the first and principal source of information relative to accidental injuries. Occasionally an employee becomes hurt and seeks treatment without informing his foreman and, of course, without giving him an opportunity to make out his report. The appearance of an injured employee at the dispensaries of certain establishments without a request for treatment signed by the foreman is regarded as indicating that the foreman is ignorant of the injury and therefore has not made out his report. He is notified (Form 91) and, at the same time, is given the information necessary for him to secure from the doctor to complete his report.

FORM 91.—*Notice to foreman of injury treated.*

NOTICE TO FURNISH ACCIDENT REPORT.

Date.................

Name...

No............. Date of injury...

Length of disability...

Remarks...

It is the custom in some places for the foreman to transmit his report to the safety department through the medical department, in which case a form may be used to remind him of omissions in this respect (Form 92). The request for foreman's report may be made out in duplicate, the copy to go to the safety department.

FORM 92.—*Request for foreman's report.*

NOTICE TO FOREMAN.

.................191..

................................, employed on your job, has been treated in our emergency hospital to-day for an injury. It is necessary that a report for same be sent to the emergency hospital at once. Please give this immediate attention, returning this card with the accident report.

EMERGENCY HOSPITAL.

2. *Physician's report of injury.*—As generally in use, the physician's report contains such information as may be deemed essential to supplement that which is contained in the foreman's report and is necessary to safety and compensation departments. The form is usually quite complicated and elaborate, and a study of a large number of them is confusing. The thought occurs that the foreman's report, containing a brief statement from the doctor descriptive of the injury (Form 93) would be sufficient in connection with the many trivial injuries that occur, injuries that do not require compensation and are consequently of no interest to compensation departments.

FORM 93.—*Physician's report of injury, combined with foreman's report; this is not the physician's record of injury.*

LARKIN CO.

Buffalo, N. Y.

Accident report.

................191..

Employee's name................................ Report No.......

Address................................	Occupation........	Department.	Check No.	Age.....	M. S.

Time...................	Place..................................	If on machine, name of machine.......

Describe in full how accident happened and nature of injury.......	Witnesses................................

................191.. .... Foreman.

MEDICAL DEPARTMENT.

Physician's report.

Nature of injury.	Treatment.

Patient sent to..

Remarks..

................191.. .... Doctor.

Department phone No.......

Working record.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Records completed, patient discharged by doctor.
						Date .... 191..

Foreman must make full report of all accidents occurring in his department, no matter how small. He must send report with patient to doctor and if serious must notify medical department, superintendent's office, by phone immediately.

Rush to doctor's office.

Serious cases that are very evidently compensable must, of course, be reported in considerable detail, with particular attention to facts that pertain to the duration and the amount of the compensation payments. In lieu of a description of this blank the suggestion is offered that it be made to conform with the report that is required by the State compensation board or other underwriter.

3. *Timekeeper's notice of disability.*—To prevent an incapacitated employee from receiving his regular pay in addition to compensation for his injury, a notice may be sent by the doctor to the timekeeper (Form 94), indicating the fact that the employee is off from work. It would appear that a copy of the notice of disability which the doctor sends the foreman or employment department would be sufficient for this purpose, obviating the necessity of making out a separate form.

FORM 94.—*Timekeeper's notice of employee's disability.*

CARNEGIE STEEL CO.
Accident department.

................., 191....

Chief timekeeper.

....................Check No......., was injured on above date and should not be allowed time until discharged by surgeon.

Dept............. Foreman....................

Date discharged by surgeon................, 191....

....
Surgeon.

4. *Compensation department's certificate of disability.*—Although the doctor's report of injury is usually regarded by compensation departments as an evidence of compensable incapacity, in certain instances, especially in those States in which according to law a definite period of time immediately following the date of injury is without compensation, a form evidencing compensable incapacity (Form 95) is submitted by the physician on the date at which payments must legally commence.

FORM 95.—*Certificate of compensable disability.*

CARNEGIE STEEL CO. .... WORKS.
Surgeon's report.

................., 191....

Name.............................. Check No.......

Date of injury................, 191.... Time of injury........m., has been off work seven days on account of injury and is entitled to be placed on compensation.

Description of injury...

Number of weeks to be carried on roll........ Average weekly earnings, $........

Position at time of injury.......... Working days per week...... Hours per day ......

Remarks:...

....

Case No...... ....
Surgeon.

5. *Progress report.*—It is the wish in some concerns that compensation departments receive from time to time reports indicating the progress of compensable cases. A form used for this purpose should identify the patient and reaffirm the estimate of disability.

6. *Certificate of termination of disability.*—This form is a certificate of recovery, and it recommends the termination of compensation payments. It may be made out in duplicate, one for the compensation department and the other for the foreman or employment department.

7. *Certificates to benefit societies.*—The intent of these is the same as of those which are used in connection with the payment of compensation for accidental disability, the only difference being that the certificates to benefit societies direct and terminate the payments of compensation for illness.

PHYSICAL EXAMINATIONS.

1. *Request for examination.*—This form is similar to the request for treatment. It serves to identify the applicant when he appears for the examination.

2. *Record of findings.*—There is a very definite inclination among industrial physicians to simplify the form used in recording the information obtained by physical examinations and to indicate thereon only positive facts, omitting personal and family histories. A good example of the simplified form is found in that which is used by the Youngstown Sheet & Tube Co. (Forms 96 and 97). Colors indicate impaired and rejected applicants.

Form 96.—*An example of the simplified form of physical examination record.*

THE YOUNGSTOWN SHEET & TUBE CO.
Medical Department

Check No....... Name..
Department..................... Age.......... Date................
General appearance..
Height........ft........in. Weight........ Color hair..........
Eyes..
Ears..
Nose..
Mouth..
Neck..
Heart..
Lungs..
Abdomen..
Arteries..
Extremities..
Ing. region..
Spine..
Skin..
Infectious disease..

Defects that disqualify

Defects that do not disqualify

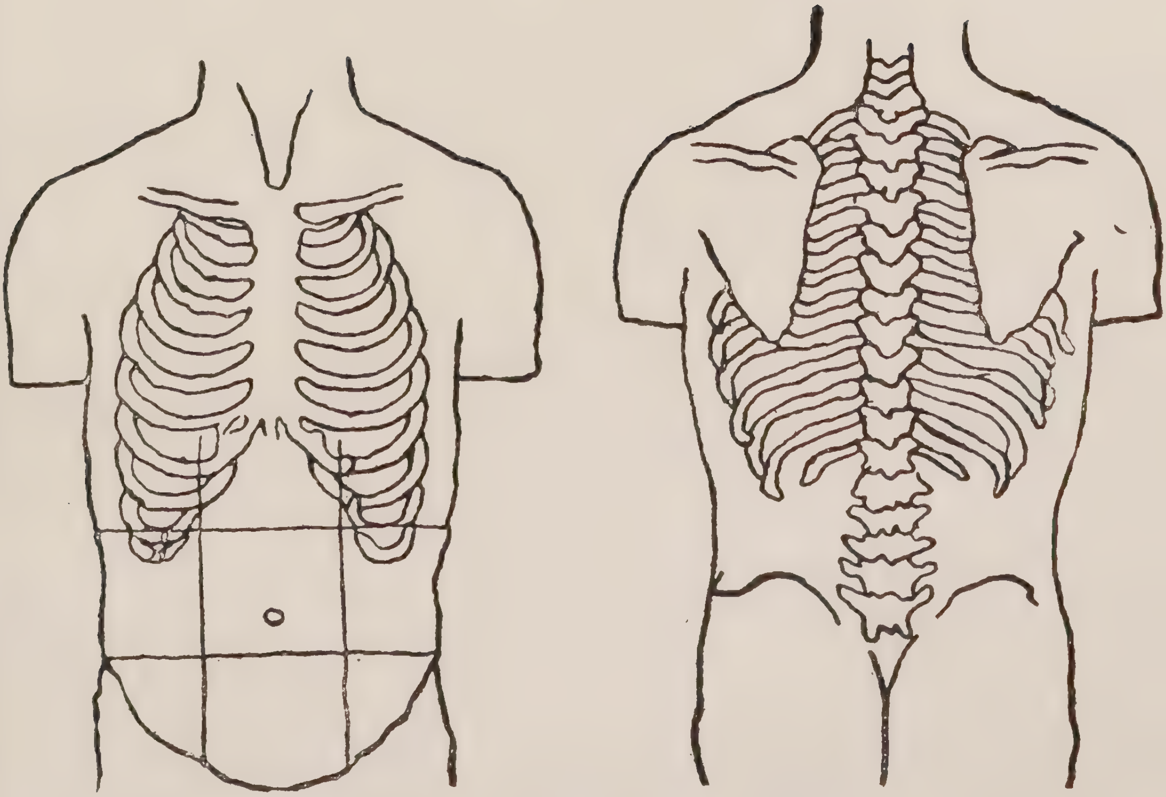
Kind of work not allowed

Urinalysis

Sp. G. **Alb.**

React **Sugar**

Lungs



Form 97.—Reverse of card shown in Figure 98.

A small card, 4 by 6 inches, which is at the same time somewhat comprehensive and apparently very satisfactory, is illustrated in Forms 98 and 99.

FORM 98.—*A small but comprehensive record of physical examination.*

PHYSICAL EXAMINATION—MEN.

Name			Clock No.	Dept. No.
Address			Married Single	Age
Nationality	Occupation	Date employed	Date examined	Referred by

What diseases have you had?

Nature	Date	Duration	Complications

What injuries, accidents, or surgical operations have you had?

Nature	Date	Duration	Results

Have you ever had:

Hernia	Rheumatism	Fistula	Venereal disease

Signed............................

Height	Weight	Temperature	Inspection and palpation of head and neck	
Tongue	Teeth	Gums	Throat	Nasal passages

FORM 99.—*Reverse of card shown in figure 98.*

Right Vision:	Left	Color blind	Wear glasses	Right Hearing:	Left
Auscultation Lungs:			Percussion		
Sounds Heart:	Rhythm	Size	Blood pressure: Systolic	Diastolic	Pulse pressure
Character of Pulse:	Condition of arteries		Inguinal or femoral hernia		

Condition of abdominal viscera:

Urinalysis:	Spec. gravity	Albumen	Sugar	Sediment	Microscopic
Pupils	Tremors	Stellwag Groef's Romberg	Spine	Glands	Reflexes

Scars or deformities from operation, injury, or disease..

Evidence of infectious disease..

Accepted	Physically unfit	Rejected

Why?..

(Signed).............................
Examining physician.

A form which requires very little clerical work appears in figure 100. It has the additional advantages of showing at a glance the names and distribution of defects and of providing spaces for three subsequent examinations by means of which comparisons may easily be made. On the reverse side of this form are diagrams and lightly ruled lines upon which unusual conditions may be described in detail.

FORM 100.—*A record of physical examination that requires little clerical work, and provides space for three subsequent examinations. Diagrams are on the reverse side.*

PHYSICAL EXAMINATION.

Name .... Check No .... Age ....

Duties recommended for ....

Date of examinations.								
	R.	L.	R.	L.	R.	L.	R.	L.
EYES.								
1. Defective vision								
2. Old injury								
3. Conjunctivitis								
4. Trachoma								
5. Interstitial keratitis								
6.								
EARS.								
7. Wax in ear								
8. Otitis media								
9. Deafness from other causes								
10.								
NOSE.								
11. Old fracture								
12. Obstruction								
13.								
THROAT AND MOUTH.								
14. Pharyngitis								
15. Enlarged tonsils								
16. New growths								
17. Syphilis								
18.								
TEETH.								
19. Defective teeth								
20. Malocclusion								
21.								
TONGUE.								
22. New growth								
23. Syphilis								
24.								
NECK.								
25. Goitre								
26. New growth								
27.								
LUNGS.								
28. Pulmonary tuberculosis								
29. Pleurisy								
30. Acute bronchitis								
31. Asthma								
32. Emphysema								
33.								
HEART.								
34. Valvular disease								
35. Myocarditis								
36.								
ABDOMEN.								
37. Enlarged liver								
38. Enlarged spleen								
39. Chronic appendicitis								
40. Ventral hernia								
41. New growths								
42. Kidney lesions								
43.								

Date of examinations.								
	R.	L.	R.	L.	R.	L.	R.	L.
INGUINAL REGION.								
44. Inguinal hernia								
45. Inguinal adenitis								
46.								
GENITO-URINARY.								
47. Chancre								
48. Varicocele								
49. Hydrocele								
50. Undescended testicle								
51. Epididymitis								
52.								
EXTREMITIES.								
53. Old fracture								
54. Old mutilation								
55. Varicose veins								
56. Ankylosed digits								
57. Wrist deformities								
58. Flat foot								
59. Bunion								
60. Ingrowing toenails								
61.								
SKIN.								
62. Acne								
63. Eczema								
64. Psoriasis								
65. New growth								
66. Syphilis								
67. Other infectious diseases								
68. Scars or identification marks								
69.								
ARTERIES.								
70. Arterio sclerosis								
71. Aneurism								
72.								
BLOOD PRESSURE.								
73. Systolic								
74. Diastolic								
75. Difference or pulse pressure								
76. Ratio of P. P. to diastolic								
GENERAL.								
77. Weight in pounds								
78. Height								
79. General appearance								
80.								
URINALYSIS.								
81. Sugar								
82. Albumin								
83. Specific gravity								
MISCELLANEOUS.								
84. Stiff joints								
85.								
86.								
87.								

NOTE.—Mark X to indicate defects that do not require medical measures; XX that require medical measures, but do not disqualify; XXX that disqualify.

Describe XX and XXX conditions on other side, using reference numbers and diagrams where necessary.

PICKANDS, MATHER & CO.

Occasionally dental conditions are included in the examination blank, in which case the usual dental diagrams are used. The conventional form, most generally in use, has not been mentioned because of its great resemblance to the well-known life insurance examination blank.

The thought occurs at this point that there should be some way devised whereby the great mass of information that is being collected relative to the physical conditions of workers should be made available for public good. The first step toward this end would be, of course, the standardization of the examination blank. Although the making of physical examinations and the recording of the findings is at the present time purely an industrial affair, the collecting of the information and its application to the public good are matters of more than industrial consideration. It is, therefore, suggested that a commission or a body of people who are representative of industrial médicine, public health affairs, and others be appointed and organized for the purpose of considering this question from its broadest standpoints, including the preparation of a standard form for recording examinations (including data relating to job requirements), means for collecting the information, and applying it.

3. *Record of reexaminations.*—In many places the form that is used for the first examination is also used for reexaminations, a summary card (Form 101) being used to record and compare the dominant facts. When reexaminations are made for special purposes, such as to check up lead workers, a register is used, one line to an examination, with the data placed in columns under appropriate heads.

FORM 101.—*Summary card for reexaminations of process workers.*

PHYSICAL EXAMINATION DEPARTMENT.

Occupational Examination.

Name...Dept.................Clock No................
Address..
Date employed.................................Date assigned to dept................................
General appearance..........................Occupation...

Result of physical examination.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Pulse												
Temperature												
Eyes												
Mouth and teeth												
Heart												
Lungs												
Abdomen												
Nerve reflexes												
Urine analysis												
Weight												

Remarks..

4. *Record of examinations for special purposes.*—These are for the study and observation of food handlers (Form 102), tubercular employees (Form 103), process workers (Form 104), etc.

FORM 102.—*Record of special examination for food handlers.*

EXAMINATION OF FOOD HANDLER.

Plant .... Eastman Kodak Company Date ....
Name.......................... Age.............. Sex................M-S-W.
Address..................... Last vaccination............ Char. of scar............
Occupation............ {Part time........ / Whole time.....} Cleanliness.......... Neatness..........
Finger nails............ Skin............ Mouth.............. Scalp............
Typhoid:
  Has employee ever had typhoid fever, or been exposed to it?...... Widal......
  Vaccinated for typhoid fever?............ When and by whom?..............
  Remarks: ....
Syphilis:
  General appearance...... History........ Glands.......... {Post cervical...... / Epitrochlear......}
  B. P........ Scars?............ Septum............ Eruption?..............
  Throat............ Abortions or miscarriages?............ Heart..............
  Remarks: .... Wasserman..................
Tuberculosis:
  General appearance............ T............ P............ Wt............
  Cough?.................. Exposed to Tb.?.............. Sputum............
  Remarks: .... Chest exam..................
Gonorrhea:
  History.............................. Ureth. disch.?......................
  Ing. glands?................ Orchitis?.............. Vulvo-vag............
  Remarks: .... Smear..................
Diphtheria:
  Appearance of tonsils.......... Remarks.......... Throat culture............
Exanthemata, scabies, and pediculosis..
General remarks..
Free from communicable disease?........ .... M. D.

FORM 103.—*Record of special examination for tuberculosis.*

Name.. Date..................
1. Prolonged intimate contact...
2. History of pleurisy, frequent colds, grippe, pneumonia, or fistula ....
3. Present weight........................ Normal weight ....
4. Expectoration......................... Sputum examination ....
5. Cough................................. 6. Lassitude ....
7. Hemoptysis............................ 8. Appearance ....
9. Pulse................................. 10. Temperature ....

PULSE—TEMPERATURE RECORD.

Date.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.
Temperature........										
Pulse..............										

FORM 104.—*Record of examination for leadworkers.*

Name.................................. Badge No.........
Weight.................................Bowels.................................
Teeth..................................Appetite...............................
Alcohol................................Tongue.................................

GRIP.

Right T............ P................ Left T.............. P.................
Remarks...

5. *Reports on physical examinations.*—As with the reports on general dispensary service, the purpose is to summarize the information that interested officials wish or the facts the doctors desire to emphasize. They may concern the numbers of examinations, reexaminations, acceptances, and rejections, with possibly a review of the defective conditions found among those accepted and those rejected. The report that is made up for scientific study relates chiefly to character and distribution of defects found. It is usually nothing more than a list of defects.

THE VALUE OF INDUSTRIAL MEDICAL SERVICE.

Early in the study it was hoped that means for the valuation of industrial medical service could be found whereby definite limitations for expenditures could be justified, but such means could not be found. Employers are agreed that it has value, though they confess that the value for the most part is intangible and can not be expressed in terms of money. Failing in this, a different method was broached. "Why do you have a medical department?" responsible officials were asked.

"Purely for service," was the characteristic reply of one of the officers of the Ford Motor Co.

"We owe it to our men," said the superintendent of the Toledo Furnace Co.

"It is only human that we should take care of the men injured in our service," another answered, and he added with business acumen, "Constant expert medical service is insurance against big damages."

These and similar answers indicate that industry has a sense of its obligation toward the workers who become injured during employment. Another reason was brought out by other answers.

"It is a check on conditions that impair the health of our employees," testified the factory manager of the Willard Storage Battery Co. "It is just as necessary as a cost department, or any other nonproducing department," he continued.

"To safeguard the health of the workers in the belief that the healthy worker is more efficient." The sincerity of this answer was supported by the fact that a modern machine shop had been moved by this concern in order to provide quarters for a department of industrial relations, with divisions of health, safety, and labor.

"Health education will reduce absenteeism 50 per cent," was the surprising assertion of the superintendent of the National Lamp Works, Youngstown, Ohio, a successful employer of female labor.

"Instruction to the new men as they pass through the dispensary upon employment has reduced accidents by 50 per cent in four months," was the equally surprising asseveration of the physician of a rubber establishment.

"It keeps the men on the job," was a frequent answer.

From these replies and others of similar import it may be gathered that industry believes medical service is capable of removing or minimizing certain causes of lost time.

A slightly different phase is represented in the following answer, which came from the director of safety and medical service for the White Motor Co. "Our medical department," he said, "has no responsibility beyond repairing damage done at work, though the doctor takes care of injuries not contracted at work and sickness, to keep men on the job. Men able to do light work, but not their regular work, are given light work on regular pay. We have a man with a bad heart—on the job by constant care of the doctor. We have a man 60 years old who has had rheumatism since a child; he couldn't get life insurance. We keep him on the job through the doctor's help, in order that he can get a house paid for." This firm, it is of interest to mention, had an annual labor turnover of only 60 per cent at a time (Feb. 28, 1918) when labor was exceedingly restless and turnovers of 200 to 300 per cent were not unusual.

In striking contrast to this was the situation in a large and rapidly growing establishment in the Middle West. Without quoting directly, it seemed, according to the officer interviewed, that this company provided excellent working conditions, with good lighting, etc., but having 16 plants it was difficult for them to organize a central, or in fact any, medical department. However, the number of accidents was very small, how many he was not able to say. The working force was stable. They had men who had been with them nine years, since the company was organized. They stabilized their labor by treating employees right. Everyone had access to the management, and employees were kindly disposed toward them. Yes, they had some turnover. They hired 31,000 people in 1917. He could think of no reason except labor conditions and sickness. He closed the interview with a remark which was to the effect that his company was satisfied with the conditions. Point is given to these utterances by the fact that this company had a labor turnover for the year of 1917 that was somewhat over 400 per cent.

It does not necessarily follow that the absence of a modern medical service from the executive organization of this establishment caused the high turnover of labor, nor does it necessarily follow from the previous quotation that medical service is the panacea for labor turnover, but there is sufficient reason in this and the expressions of other employers to warrant the conclusion that medical service is regarded as one of several activities that have been found to be of use in removing certain unstabilizing influences from employment. In this connection the particular services which medicine is able to render are: (*a*) The moderation of the effects of accidental injury; (*b*) the prevention of some varieties of sickness and the alleviation of others; (*c*) the definition of the physical limitations of employees in order that they may not be overworked; and (*d*) the promotion of a feeling of security among the employees by the manifestation of interest in their personal welfare.

A manufacturer who has developed a medical department of unusual scope and activity goes further than this in his pronunciation for industrial medical service.

"It is the point of contact between the head and the men," he said. "It promotes a feeling of good will toward the management. It has saved us a strike. It increases earning capacity by making the men regular and dependable. Wages have increased 68 per cent in seven years and the cost of material has gone up, as you know, but our cost of production none."

Medical service according to him is able not only to assist in the stabilization of labor, but to increase its productivity as well. Others contributed to this opinion.

"Why do we have a dispensary?" asked one, and he answered, "It pays."

"It's good business," said another, and he spoke for many.

A slightly different aspect is represented in the acknowledgment of the man who considers expert medical service to be a source of economy. "It saves us money," he replied, and confessed further, "It prevents litigation and keeps men on the job."

"It reduces our insurance cost," admitted another, in similar vein.

Expert medical service, according to these expressions, has proven to be good business, which indicates that it is profitable to industry, and an economical means of providing for the care of injured employees. More gratifying to the medical profession is the following reply:

"These measures (the activities of a proficient medical department) result in increased regularity and efficiency at work, reducing absence and alleviating pain, discomfort, and anxiety. In the minds of employees is created a sense of security, of confidence that they are working under the best possible conditions, that their physical welfare is being cared for, and that in accident or sickness proper attention will be provided. A healthier and more contented body of workers, with a higher industrial earning power, is the result."

Some employers were forced to provide medical service by reason of the locations of their establishments, others did so because it was "usual to such industries," and one was frank enough to concede that it was the insistance of his doctor that caused him to put in a medical department.

It appears from these expressions that industrial medical service is not a gift to labor, nor a charity, but purely a function of good business. The reasons which induce employers to provide their workers with medical service may be summarized as follows:

1. It is an acknowledgment of their obligation toward the workers who sustain injuries during employment and an economical means of procuring expert attention for them.
2. It is deemed capable of removing or minimizing certain causes of lost time.
3. It is one of several activities that have been found to be of use in removing certain unstabilizing influences from employment, and as such can be expected to assist in holding down the labor turnover.
4. It enables the workers to produce more.
5. It prevents litigation and reduces compensation expense.
6. It contributes to a sense of security among employees and promotes a feeling of good will toward the management.
7. Conditions make it imperative in isolated industrial establishments.

ON STARTING INDUSTRIAL MEDICAL SERVICE.

While the health of workers is largely a matter that is personal to them and their dependents, their earning capacity, which is fixed in no small degree by their conditions of health, is an object of considerable concern to their employers as well as themselves and their dependents. It is evident, then, that employers and employees each have reasons for being interested in the workers' health and possibly equal responsibilities toward its maintenance; but the position which the employers occupy confers upon them the obligation of leadership, and if they desire medical service, and if it is acceptable to the workers, the employers must provide the organizations and facilities necessary to procure it.

An illustration of the ideal in this respect was noted in Cleveland early in 1918. It seems that the employees of a suit and cloak company, who are organized for the purpose of determining policies and questions entering into their relations with the management, realized that their usefulness as makers of suits and cloaks depends greatly upon their eyesight. The company had already conformed to the requirements of modern lighting standards, and the installations were such as would permit close work, as required by the trade, with the least possible degree of eyestrain. The employees realized that, despite satisfactory illumination, imperfections in their own eyes would militate against efficiency, and as a body they requested the management to secure the services of an oculist for the examination of their eyes and the fitting of such glasses as would appear to be needed. At the time the establishment was visited the production superintendent indicated that the management would comply with the request.

Workers are accustomed to accept surgical service from their employers for the injuries they incur during employment, and, in some localities, medical treatment for sicknesses that result from the hazards of certain trades, but they are not quite ready as a whole for the acceptance of industrial medicine in its broadest application which has for its purpose the preservation of their health through the instrumentality of physical examinations, health education, and the other activities of preventive medicine. Undoubtedly they realize the value of health, but to accept service from their employers designed to assist them in retaining it smacks, in their opinion, too much of philanthropy unless they themselves have requested it or have been made thoroughly to understand its object.

Even though selfish interests may prompt the operators of industrial establishments to provide health service for their people, the fact that it assists employees to protect their health, helps them to greater earning power and, through favorable working conditions, contributes to their peace of mind, would seem to justify efforts to influence them in its behalf. Certainly, before attempting to initiate health service, and above all in those establishments where there has previously been no form of medical or surgical service, it would be advisable for employers to inform their workers of its purposes and benefits. The facts should be put to them clearly, explaining that, although workers are benefited by health service, its intention, so far as the purposes of industry is concerned, is to increase their output, which is a result the employers are willing to pay for and, in fact, should. They should be given also to understand that health service is no more a gift conceived in philanthropy or charity than the tools and machines they are given to work with or the buildings that shelter them while they work. Health service has its proper place in industry with other facilities and should be supplied by the operators because these are necessary to production.

Possibly a more tactful procedure, also more certain though slower in its development, is to begin with a dispensary for the care of injuries, if such is not already in operation, for being accustomed to this service employees accept it without question. As the value of a medical department depends primarily upon the doctor's ability to inspire confidence and create a demand for that which he has to offer, it appears that he should be selected with fully as much consideration of his personality as of his professional competency, which should be of the highest order. If the size of the establishment does not warrant full-time employment, the physician should be required to put in somewhat more time than is necessary for the care of patients, in order that he may have leisure to study plant conditions and become acquainted with the employees.

From time to time certain workmen will consult him for the relief of headaches and other trivial ailments, and as his work becomes proven others will do so in constantly increasing numbers until there is a fixed demand for service of that character. These patients may be given complete physical examinations when circumstances appear to be opportune, and if the results are such as may be expected, others, adroitly inspired by the doctor, may offer themselves for similar examinations, likewise in growing numbers, with the result that the procedure eventually becomes a regular activity secure in the fact that it is beneficial to the employees.

Themselves the recipient of those favors, and being already employed, the workers can have no objection to the use of the physical examination as a requisite for employment. Nor will applicants for employment demur when they are made to understand that the knowledge gained through the examination is to be used in defining their physical limitations in order that they may be assigned to work they are capable of doing, rather than as cause for their being refused the opportunities to work. If rejections should be necessary on the grounds that the applicants have diseases capable of transmission to others or afflictions that render employment in the available jobs dangerous to themselves and possibly to others, surely no one can have any tenable opposition.

Under the guidance of a tactful, able physician other activities may be developed easily and naturally until a medical department that is capable of rendering the full measure of health service is firmly established.

In some industrial places mutual benefit associations of the workers have been used as vehicles for health service, probably in the belief that employees appreciate the service more when they are made to pay at least a nominal sum for it.

COOPERATIVE MEDICAL SERVICE FOR SMALL INDUSTRIAL ESTABLISHMENTS.

During the study two small establishments, one employing 400 and the other 500 workmen, were observed to have whole-time medical services, and in one of them the average number of workmen per physician was about 200. This latter observation indicates that at least one employer has satisfied himself that it is not only feasible but practical as well for him to secure a whole-time service for a relative small number of workers. However, there is a very good reason to believe that the great majority of owners of small establishments have not reached the attitude of mind where they are willing to expend the money necessary to maintain whole or even part-time service, and that, on the contrary, they still adhere to the detached medical aid which is restricted largely, if not entirely, to the care of emergencies. As there are in the aggregate thousands of people employed among the small industrial concerns, perhaps fully as many as are employed among the comparatively few large establishments, it is readily perceived that large numbers, if not the greater part, of our working population are compelled to labor under conditions that are not the most favorable from the standpoint of industrial medicine or physical and health supervision.

Certainly it would seem that a movement which purposes to further the development of industrial medicine in order that workers may have the benefits of health supervision, during their hours of employment particularly, must consider the problem of the small establishments and devise ways and means whereby a broader and more effective medical service may be obtained for them. A means toward this end is suggested by the trend of industry toward the centralization of certain duties and functions. Insurance coverage, for instance, has been centralized and carried more or less on a cooperative basis for many years. In more recent times traffic bureaus have been organized for the purposes of quoting freight rates, routing shipments, tracing lost shipments, auditing freight bills, and handling other questions pertaining to transportation. And of comparative recent date employment services have been assumed by bureaus under governmental management or mutual private support.

The Manufacturers' Association, of Erie, Pa., is an organization of employers of labor which furnishes aid in matters of traffic, compensation and casualty insurance, and employment service for its members. When Pittsburgh was visited during the course of the studies, it was learned that the Employers' Association of that city had in contemplation the organization of a centralized employment department, which was expected to act for its members in a capacity similar to that of the employment departments of many well-organized industrial concerns. These are mentioned as being indicative of the tendency to establish, on a mutual or cooperative basis, facilities for the securing of labor, especially for those small employers who for evident reasons are not able to have departments of their own. In this connection the thought occurs that the functions of these centralized employment departments or bureaus might profitably be extended to include the physical examination of applicants for employment and the physical supervision of them after placement. Or the scheme may be further broadened to include all of the activities pertaining to employment relations, such as the prevention of accidents and those other activities which are commonly known as welfare work.

Industrial concerns congregate, and all cities of size have manufacturing centers that are made chiefly of small factories, in which old methods of hiring and firing and emergency aid to injured employees prevail. In such centers, if the number of small factories are sufficient to justify it, cooperative employment and service bureaus could be established with employment, medical, safety, sociological, and compensation departments. These community bureaus could be operated as branches of a central bureau, the principal functions of which would be to direct the branches, coordinate their activities, and act as a point of contact between them and all outside agencies, including municipal, State, and national authorities, insurance companies and commissions, charitable organizations and business institutions.

Referring particularly to the medical aspects of a service based on this plan, it may be said that a well-equipped dispensary should be located in each community bureau, with an ambulance and a staff of physicians, dentists, attendants, and clerks large enough to handle the work. Small dressing stations could be placed here and there in the district as necessary, to be used very much as the stations in the plants of the Ford Motor Co. and in the mills of the Bethlehem Steel Co. The duties of the medical department would be the same as might be expected of it were it attached to one large establishment. They would embrace medical and surgical treatments as heretofore described, prophylactic and educational work, factory inspections and studies among the workers, etc.

The very evident advantage of this plan is that it would enable small concerns to obtain the benefits of a whole-time medical service at a cost which should be in proportion to their numbers of employees and consequently within their reach. To a certain extent this plan is in operation in the Central Manufacturing District, of Chicago, which is composed of a number of manufactories. Although the basic purpose of the District, as it is called, seems to be to furnish switching and shipping service, other functions and duties have been centralized, and among them is the surgical care of injured employees. A dispensary, the equipment of which includes an ambulance, is located in the District, and is manned by a staff adequate to render service at all hours.

In several cities are buildings in which small manufacturing concerns may rent space and purchase power and light. Although the companies that usually avail themselves of these facilities are small, employing but few workmen, rarely more than a hundred, there may be in the aggregate 1,000 or 2,000 employees to a building, a number that certainly justifies the maintenance of a dispensary and the employment of one whole-time physician, two nurses, and a clerk. By prorating the cost among the companies, perhaps according to the numbers of their employees, the expense would be in proportion to their means, yet they would have the use of a whole-time medical service and the benefit of its advantages.

A bureau of industrial hygiene was inaugurated by the division of health, of Toledo, Ohio, July 7, 1917, the objects being:

1. To ascertain the presence of conditions and substances in places of employment having a harmful effect upon the health of the workers;
2. To study the effects of these harmful conditions and substances;
3. To suggest means for their elimination or minimization; and
4. To educate in matters pertaining to factory hygiene.

Such a bureau municipally maintained and operated is not in the ordinary sense cooperative, but inasmuch as every taxpayer in the city of Toledo contributes to its support it is more completely cooperative than if it were privately conducted.

To suggest that this bureau of industrial hygiene should broaden the scope of its activities to incorporate all of the functions of industrial medicine, even to the extent of establishing dispensaries in the various manufacturing districts of the city is several years in advance of that which may reasonably be expected, yet Toledo and the State of Ohio jointly maintain and operate an employment bureau in that city for public benefit, and other cities have similar bureaus. Perhaps the next step is for the Toledo division of health to make physical examinations of all who apply at the municipal bureau seeking employment, and in time when the public, and more particularly the physicians, have become accustomed to the thought of State medicine, the other functions will naturally follow.

CONCLUSIONS.

Certain features of this report are sufficiently outstanding to justify further emphasis and for this purpose they are presented in the form of conclusions.

1. Industrial medicine is the theory and practice of medicine applied to the prevention of sickness among industrial workers and their prompt restoration when sickness or accidental impairment have occurred.

2. To be effective, industrial medicine must not be limited to the care of injuries. On the contrary, its value is determined largely by its use in the hygienic supervision of working conditions and the prevention of diseases among the workers.

3. The relation of industrial physicians to plant organizations should be such as to favor correlation and make for greatest efficiency. It is better that they look to the directing heads for authority rather than to departmental heads.

4. Whole-time medical service seems to be feasible in small establishments and wholly desirable in large establishments. However, the amount of time which a physician should be required to devote to industrial needs depends upon his ability to make himself useful in the prevention of diseases as well as in the treatment of injuries.

5. The personnel which may be required to render effective service depends more upon the ability of the directing physician to create demands for the services of his department in health maintenance than upon the number of injuries which are sustained by the workers.

6. Knowledge of the theory and practice of medicine, such as is possessed by the ordinary physician in general practice, does not necessarily mean that the possessor of that knowledge is able to apply it to industrial needs. Physicians who intend going into industrial service should seek special training in that direction which will enable them to adapt their knowledge to the requirements of industrial work.

7. A part-time industrial physician is never wholly an industrial physician, and the doctor who renders service only upon call is usually more of a surgeon than a physician.

8. Doctors who render industrial service only upon request are better paid proportionally than those who render part-time service and these are better paid proportionally than those who render whole-time service.

9. Trained female nurses are in greater demand as assistants in industrial dispensaries than any other class of attendants.

10. The evolution of industrial medicine and its growing importance is attracting specialists to the industrial field. Prophylactic dental service, an example of this specialization, is becoming deservedly popular.

11. Industrial dispensaries should be accessible. The rooms most used should be most available, and so arranged that passage in and out may be accomplished without confusion. The arrangement of equipment, particularly in the dressing rooms, should be such as to permit rapid care of patients in an orderly manner.

12. Whole-time physicians render more varieties of service than part-time physicians, and the latter more varieties than detached physicians.

13. While keeping records and making reports are essential to the operation of industrial medical departments, there appears to be a great variety of methods and forms used. There is very evidently a need of standardization in this direction.

14. Industrial medicine is not only humane but essential to production. It is beneficial to workers and profitable to employers. It offers splendid advantages to physicians for the development of careers in a field of rapidly growing importance, vital with opportunities for service to humanity.

RECOMMENDATIONS.

A broad view of industrial medicine, as it appears in its present stage of development, brings to light certain needs which suggest the following recommendations:

1. That standards be formulated and promulgated relative to—

(*a*) Vocational requirements.

(*b*) Physical examination of workers.

(*c*) Vocational placement of workers.

(*d*) Working conditions.

(*e*) Maintenance of health among workers.

(*f*) Medical and surgical practices in industry.

(*g*) Systems for recording and reporting morbidity statistics among workers, conditions of sanitation in plants and volume and variety of work of industrial medical departments.

2. That medical colleges be induced to provide courses of instruction in industrial sanitation and medicine, and that affiliations be arranged between the colleges and well organized industrial medical departments for post-graduate training in actual practice.

3. That a comprehensive educational campaign be organized for the continuous instruction of (*a*) the general medical profession, (*b*) industrial physicians, (*c*) employers, and (*d*) industrial workers, in order that the benefits of industrial hygiene and medicine may be more generally recognized and made more available.

4. That provisions be made whereby industrial managements may be more readily able to procure industrially trained physicians, sanitarians, and nurses for service in their medical departments.

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PUBLIC HEALTH BULLETINS.

No. 71. Studies in Vocational Diseases. I. The Health of Garment Workers. By J. W. Schereschewsky. II. The Hygienic Conditions of Illumination in Workshops of the Women's Garment Industry. By J. W. Schereschewsky and D. H. Tuck. August, 1915.

No. 73. Tuberculosis Among Industrial Workers: Report of an Investigation Made in Cincinnati, with Special Reference to Predisposing Causes. By D. E. Robinson and J. G. Wilson. April, 1916. Exhausted. 25 cents.

No. 76. Health Insurance: Its Relation to the Public Health. By B. S. Warren and Edgar Sydenstricker. March, 1916.

No. 78. Influence of Occupation on Health During Adolescence. Report of a physical examination of 679 male minors under 18 in the cotton industries of Massachusetts. By M. Victor Safford.

No. 81. Studies in Vocation Diseases. The Effect of Gas-Heated Appliances Upon the Air of Workshops. By Charles Weisman. September, 1916.

No. 85. Miners' Consumption. A study of 433 cases of the disease among zinc miners in southwestern Missouri. By A. J. Lanza. With a Chapter on Roentgen Ray Findings in Miners' Consumption. By Dr. Samuel B. Childs.

REPRINTS FROM THE PUBLIC HEALTH REPORTS.

No. 195. Industrial Conditions. Their Relations to the Public Health. By B. S. Warren. May 29, 1914. Exhausted. 5 cents.

No. 197. Industrial Insurance. Medical Examination of Employees and Prevention of Sickness its Proper Function. By J. W. Schereschewsky. June 5, 1914.

No. 234. Physical Examination of Workers. By J. W. Schereschewsky. November 20, 1914.

No. 250. Sickness Insurance. Its Relation to Public Health and the Common Welfare. By B. S. Warren. January 8, 1915.

No. 302. Industrial Hygiene. A Plan for Education in the Avoidance of Occupational Diseases and Injuries. By J. W. Schereschewsky. October 1, 1915. Exhausted. 5 cents.

No. 335. Statistics of Disability. A Compilation of Some of the Data Available in the United States. By B. S. Warren and Edgar Sydenstricker. April 21, 1916.

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No. 341. Health of Garment Workers. The Relation of Economic Status to Health. By B. S. Warren and Edgar Sydenstricker, with an introduction by J. W. Schereschewsky. May, 1918. Exhausted. 5 cents.

No. 352. Health Insurance. Report of Standing Committee Adopted by the Conference of State and Territorial Health Authorities with the United States Public Health Service, Washington, D. C. May, 1916. Committee: Wm. C. Woodward and B. S. Warren. July, 1916.

No. 400. Occupation and Mortality. Their Relation, as Indicated by the Mortality Returns in the City of New York for 1914. By Shirley Willmotte Wynne and Wm. H. Guilfoy. June, 1917.

No. 429. The Lighting of Industrial Establishments. The need for supervision, with a suggested system of maintenance rating for artificial light equipment. By Davis H. Tuck. October, 1917.

No. 434. Trinitrotoluol. Practical Points in its Safe Handling. By J. W. Schereschewsky. November, 1917.

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No. 452. Morbidity Statistics of War Industries Needed. By B. S. Warren and Edgar Sydenstricker. February, 1918.

No. 458. Methods for Field Study of Industrial Fatigue. By P. Sargant Florence. March, 1918.

No. 460. Health Hazards from the Use of the Air Hammer in Cutting Indiana Limestone. By J. P. Leake. Supposed Physical Effects of the Pneumatic Hammer on Workers in Indiana Limestone. By David L. Edsall. Effect of the Air Hammer on the Hands of Stone Cutters (A Summary). By Alice Hamilton. March and April, 1918.

No. 475. Control of Diseases in Establishments for Manufacture and Loading of High Explosives. Report of divisional committee on industrial diseases, poisons and explosives, section of sanitation, committee on welfare work. By Committee on Labor (including Conservation and Welfare of Workers). Advisory Commission (Council of National Defense), July, 1918.

No. 482. How Industrial Fatigue May be Reduced. Preliminary Report of Divisional Committee on Industrial Fatigue, Section on Sanitation, National Committee on Welfare Work. By Committee on Labor (including Conservation and Welfare of Workers). Advisory Commission (Council of National Defense). August, 1918.

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SUPPLEMENT TO THE PUBLIC HEALTH REPORTS.

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